802.11n WLAN
Portable Repeater

User's Manual

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1 Introduction

Congratulations on becoming the owner of the Wireless Gateway. You will now be able to access the Internet using your high-speed xDSL/Cable modem connection.

This User Guide will show you how to connect your Wireless Gateway, and how to customize its configuration to get the most out of your new product.

Features

The list below contains the main features of the device and may be useful to users with knowledge of networking protocols. If you are not an experienced user, the chapters throughout this guide will provide you with enough information to get the most out of your device.

Features include:

- 10/100Base-T Ethernet router to provide Internet connectivity to all computers on your LAN
- Network address translation (NAT) functions to provide security for your LAN
- Network configuration through DHCP Server and DHCP Client
- Services including IP route and DNS configuration, RIP, and IP
- Supports remote software upgrades
- User-friendly configuration program accessed via a web browser

The Wireless Gateway has the internal Ethernet switch allows for a direct connection to a 10/100BASE-T Ethernet network via an RJ-45 interface, with LAN connectivity for both the Wireless Gateway and a co-located PC or other Ethernet-based device.

Device Requirements

In order to use the Wireless Gateway, you must have the following:

- One RJ-45 Broadband Internet connection via cable modem or xDSL modem
- Instructions from your ISP on what type of Internet access you will be using, and the addresses needed to set up access
- One or more computers each containing an Ethernet card (10Base-T/100Base-T network interface card (NIC))
- TCP/IP protocol for each PC
- For system configuration using the supplied
  a. web-based program: a web browser such as Internet Explorer v4 or later, or Netscape v4 or later. Note that version 4 of each browser is the minimum version

requirement – for optimum display quality, use Internet Explorer v5, or Netscape v6.1

Note

You do not need to use a hub or switch in order to connect more than one Ethernet PC to your device. Instead, you can connect up to four Ethernet PCs directly to your device using the ports labeled Ethernet on the rear panel.

Using this Document

Notational conventions

- Acronyms are defined the first time they appear in the text and also in the glossary.
- For brevity, the Wireless Gateway is referred to as "the device".
- The term *LAN* refers to a group of Ethernet-connected computers at one site.

Typographical conventions

- *Italic* text is used for items you select from menus and drop-down lists and the names of displayed web pages.
- **Bold** text is used for text strings that you type when prompted by the program, and to emphasize important points.

Special messages

This document uses the following icons to draw your attention to specific instructions or explanations.

Note

Provides clarifying or non-essential information on the current topic.

Definition

Explains terms or acronyms that may be unfamiliar to many readers. These terms are also included in the Glossary.

WARNING

Provides messages of high importance, including messages relating to personal safety or system integrity.

Getting Support

Supplied by:
Helpdesk Number:
Website:

2 Getting to know the device

Computer / System requirements

- 1. Pentium 200MHZ processor or above
- 2. Windows 98SE, Windows Me, Windows 2000, Windows XP, Windows Vista, Windows 7 and Windows 8

Package Contents

1. 11n Repeater
2. Quick Installation Guide
3. Ethernet Cable (RJ-45)

LED meanings & activations

Top Side

The Top Side contains lights called Light Emitting Diodes (LEDs) that indicate the status of the unit.

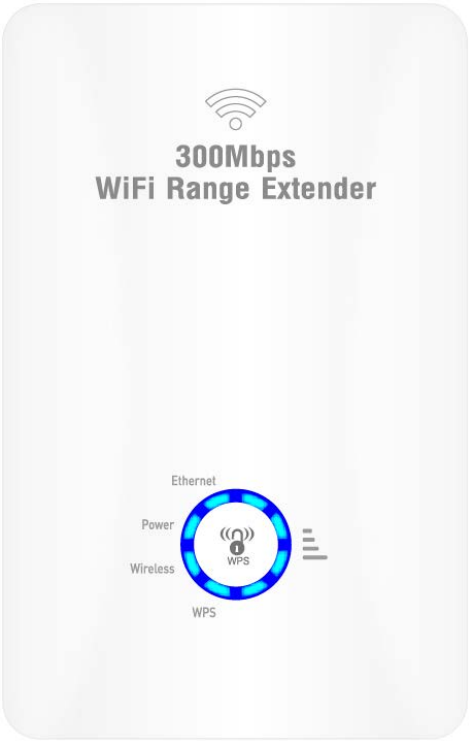


Figure 1: Top Side and LEDs

Label	Color	Function
Wifi Signal	blue	On Wireless Signal Strength Off: No WLAN link
Wireless	blue	On: WLAN link established and active Blink: Valid Wireless packet being transferred
WPS	blue	Off: WPS link isn't established and active Blink: Valid WPS packet being transferred
Ethernet	blue	On: LAN link established and active Off: No LAN link Blink: Valid Ethernet packet being transferred

Rear and Left Panel and bottom Side

The rear and right panel and bottom side contains a *Restore Defaults* button, the ports for the unit's data and power connections.

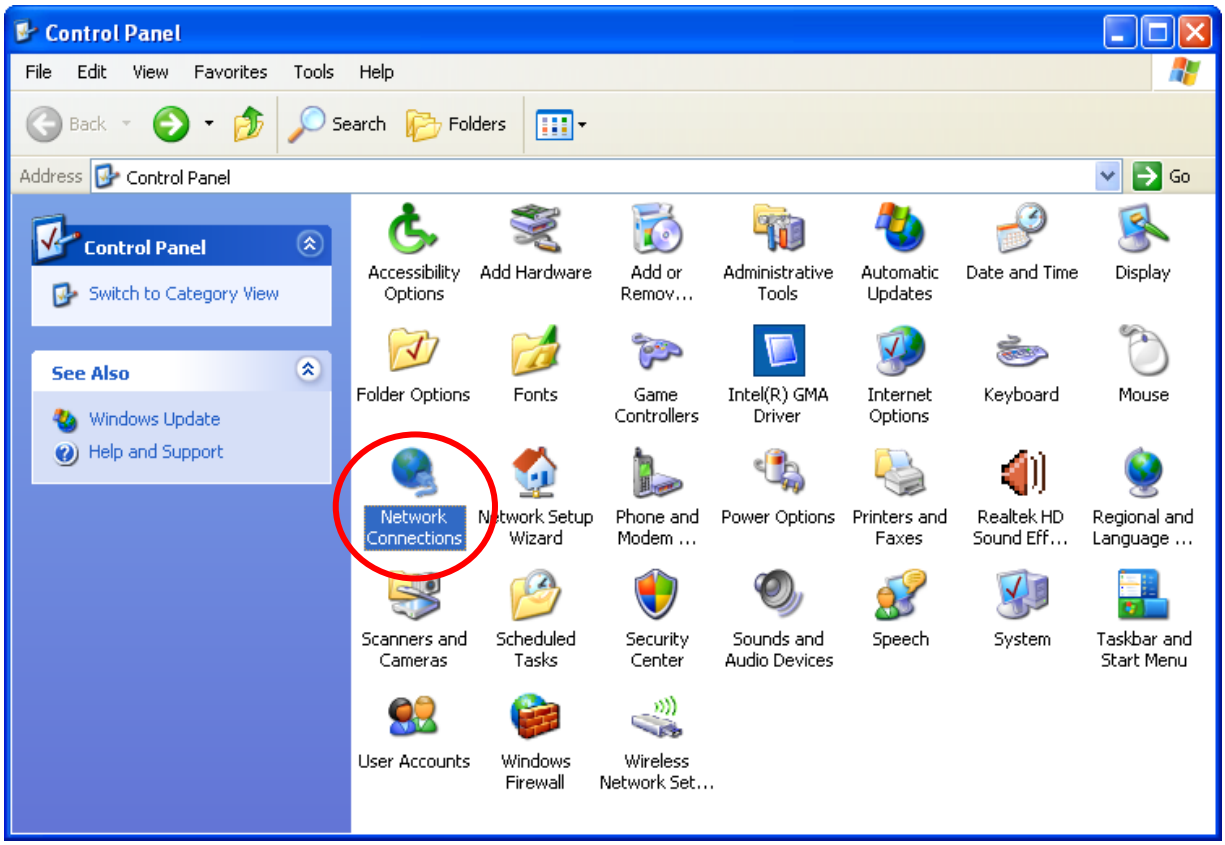
Label	Function
Ethernet	Connects the device via LAN Ethernet to a PC
WPS / RESET	WPS Press this button for 3 full seconds and the WPS LED will flash to start WPS. Now go to the wireless adapter or device and press its WPS button. Make sure to press the button within 120 seconds (2 minutes) after pressing the router's WPS button. RESET Reset button. **RESET** the 11n Repeater to its default settings. Press this button for at least 3 full seconds to **RESET** device to its default settings.

3 Computer configurations under different OS, to obtain IP address automatically

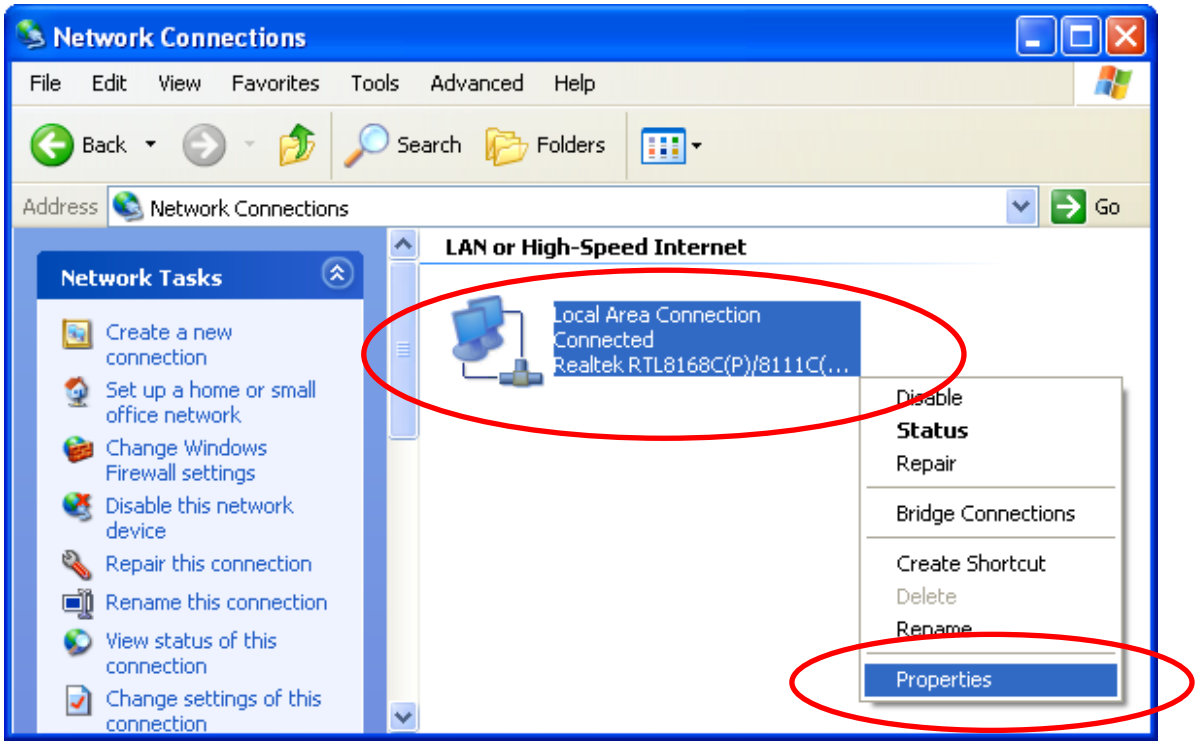
Before starting the 11n Repeater configuration, please kindly configure the PC computer as below, to have automatic IP address / DNS Server.

For Windows 98SE / ME / 2000 / XP

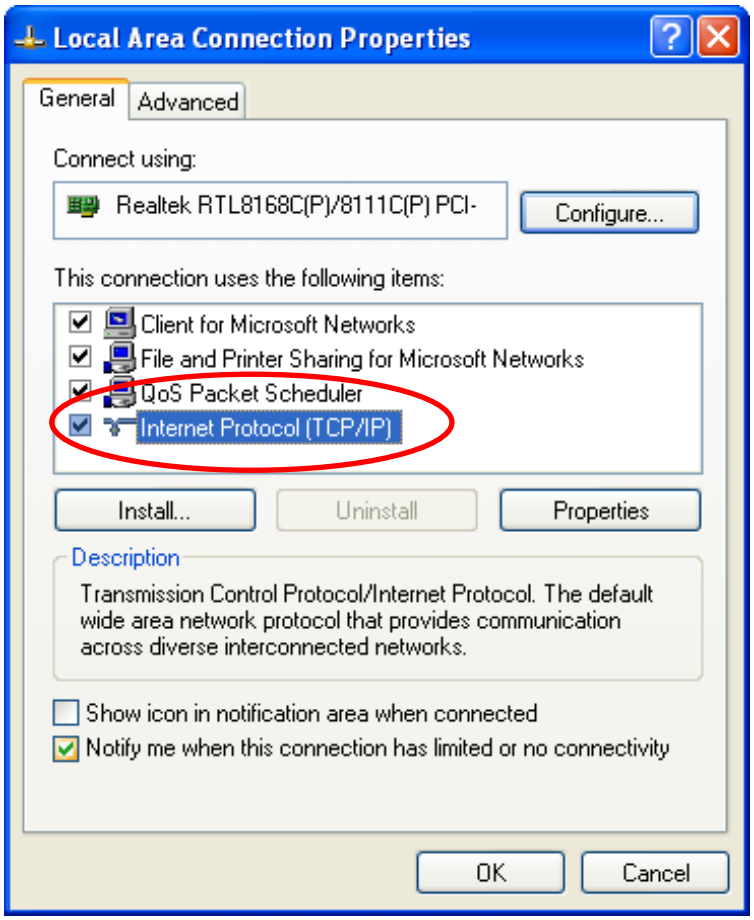
1. Click on "**Start**" -> "**Control Panel**" **(in Classic View)**. In the Control Panel, double click on "**Network Connections**" to continue.



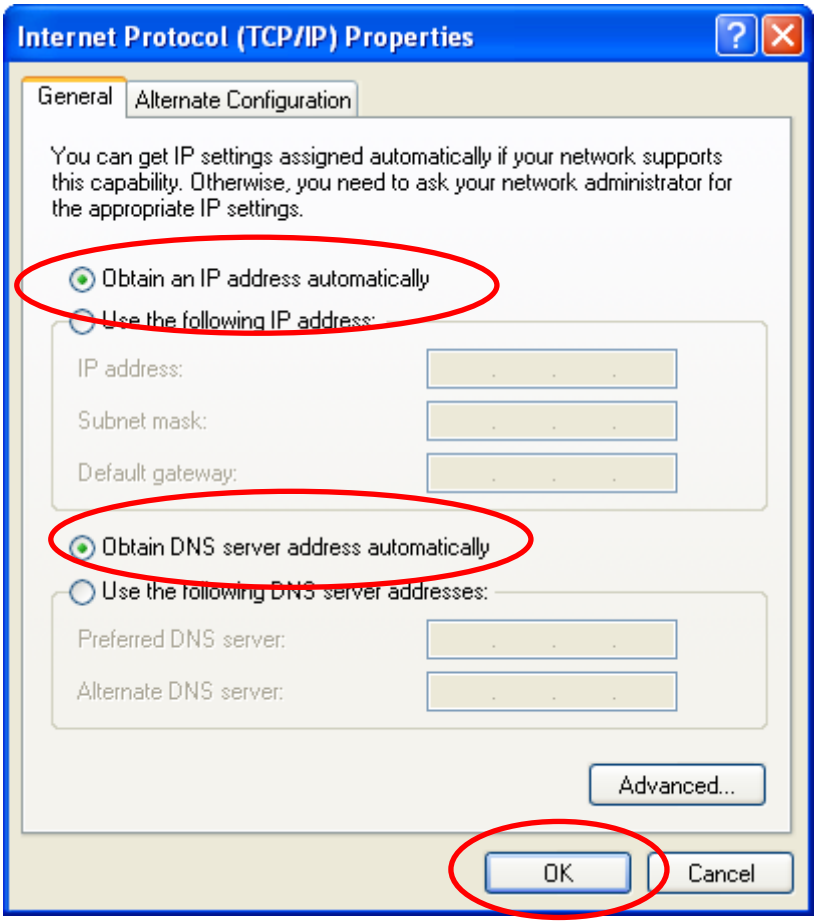
2. Single RIGHT click on "**Local Area connection**", then click "**Properties**".



3. Double click on "**Internet Protocol (TCP/IP)**".



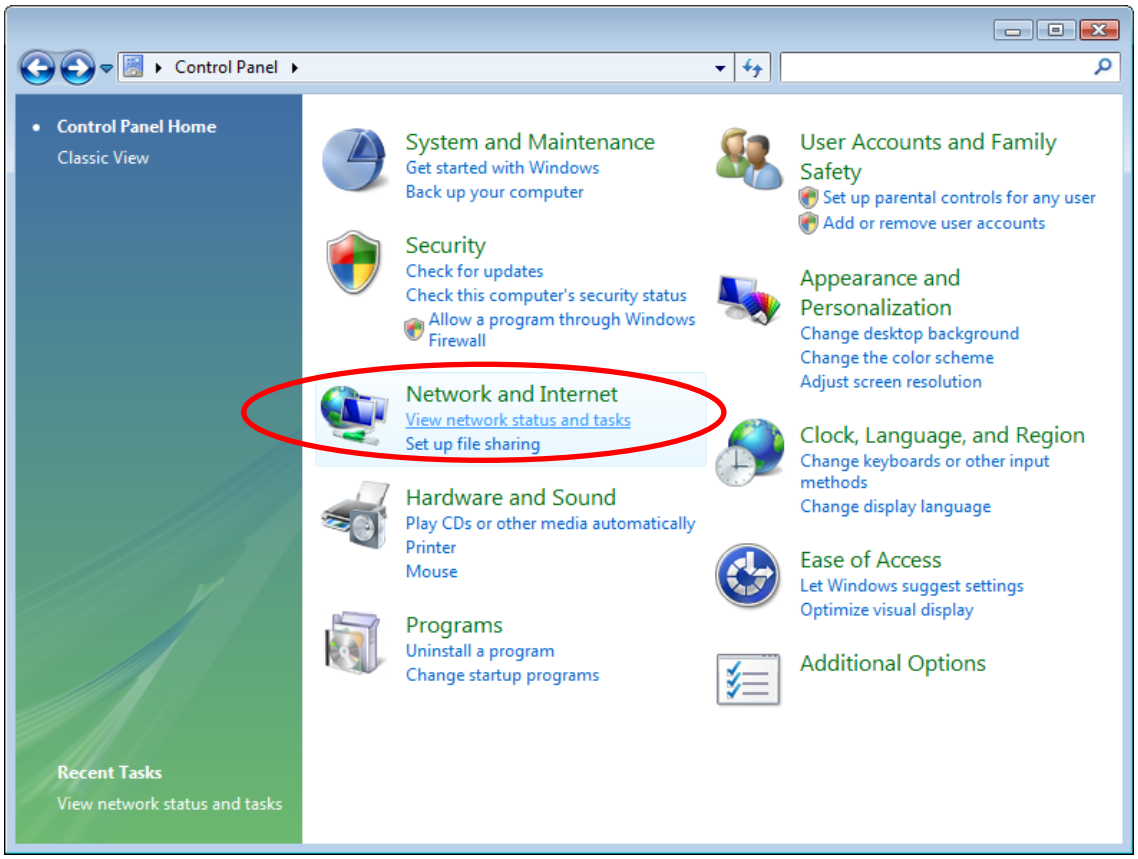
4. Check "**Obtain an IP address automatically**" and "**Obtain DNS server address automatically**" then click on "**OK**" to continue.



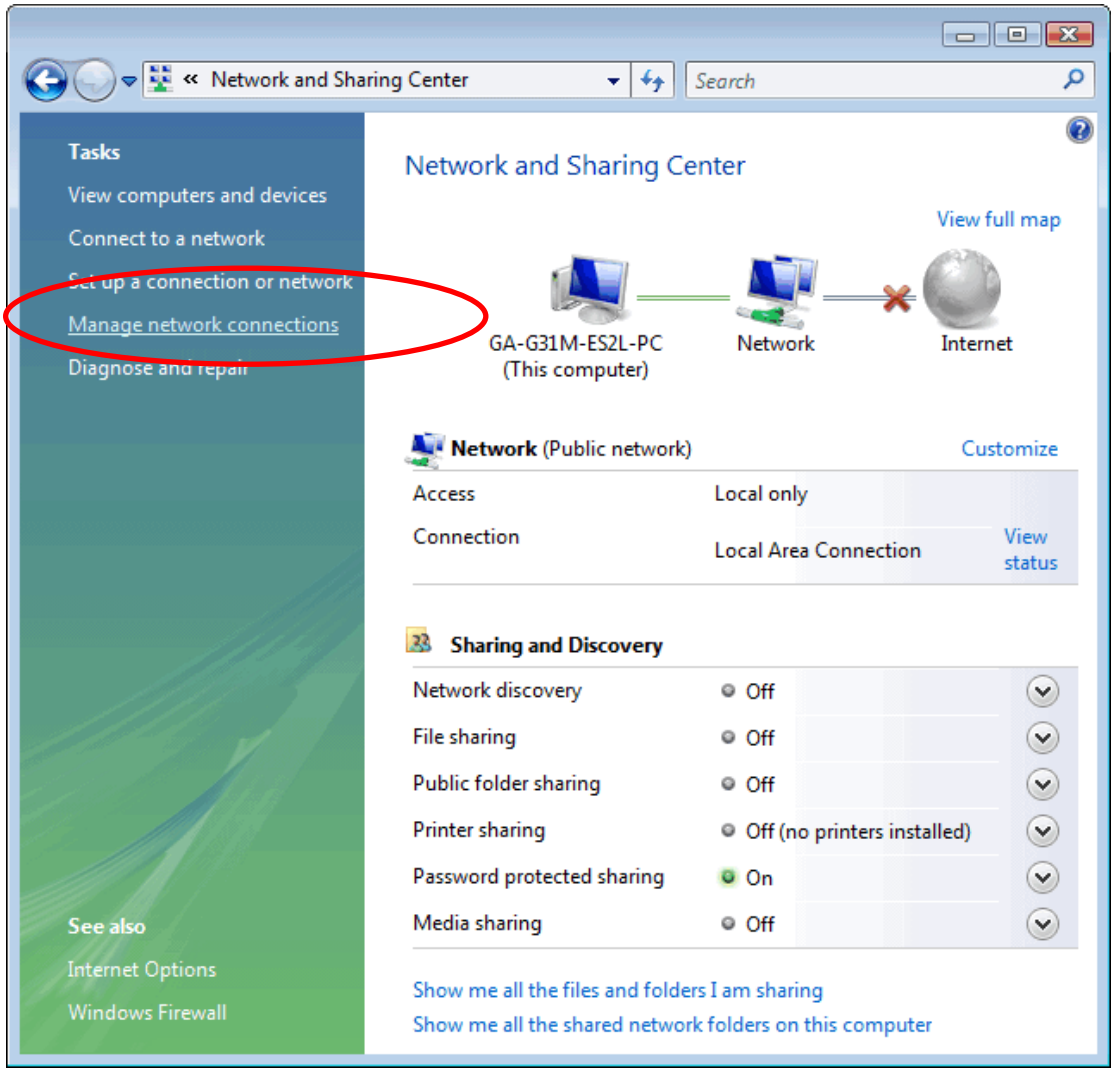
5. Click "**Show icon in notification area when connected**" (see screen image in 3. above) then Click on "**OK**" to complete the setup procedures.

For Windows Vista-32/64

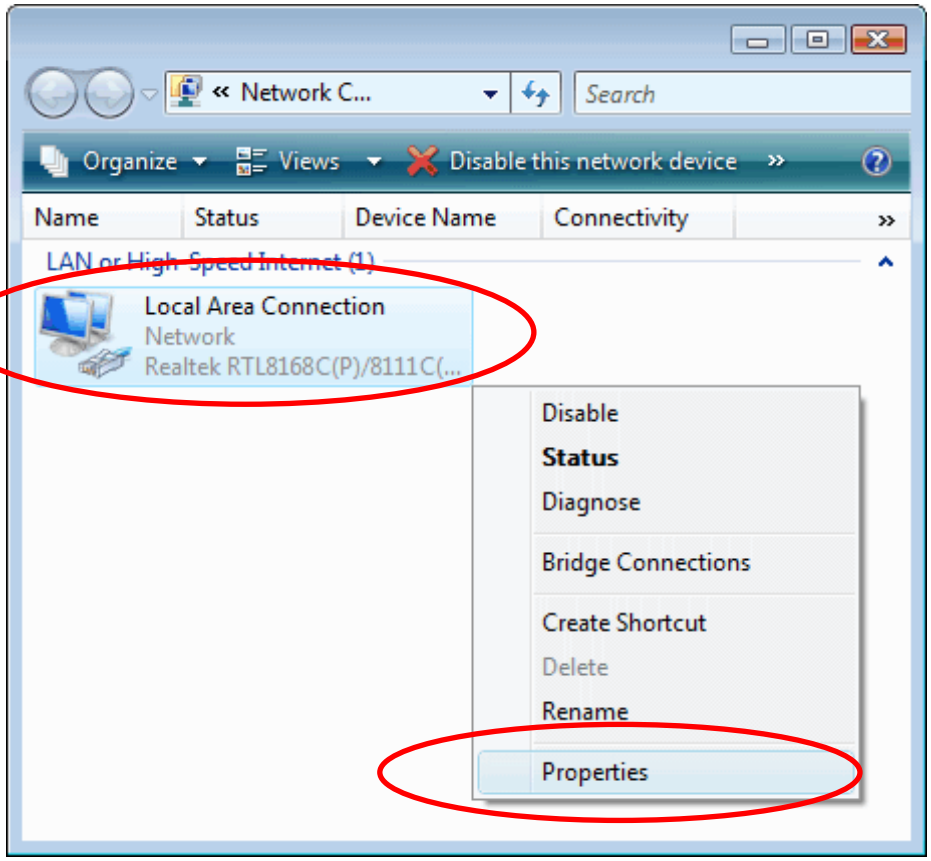
1. Click on "**Start**" -> "**Control Panel**" -> "**View network status and tasks**".



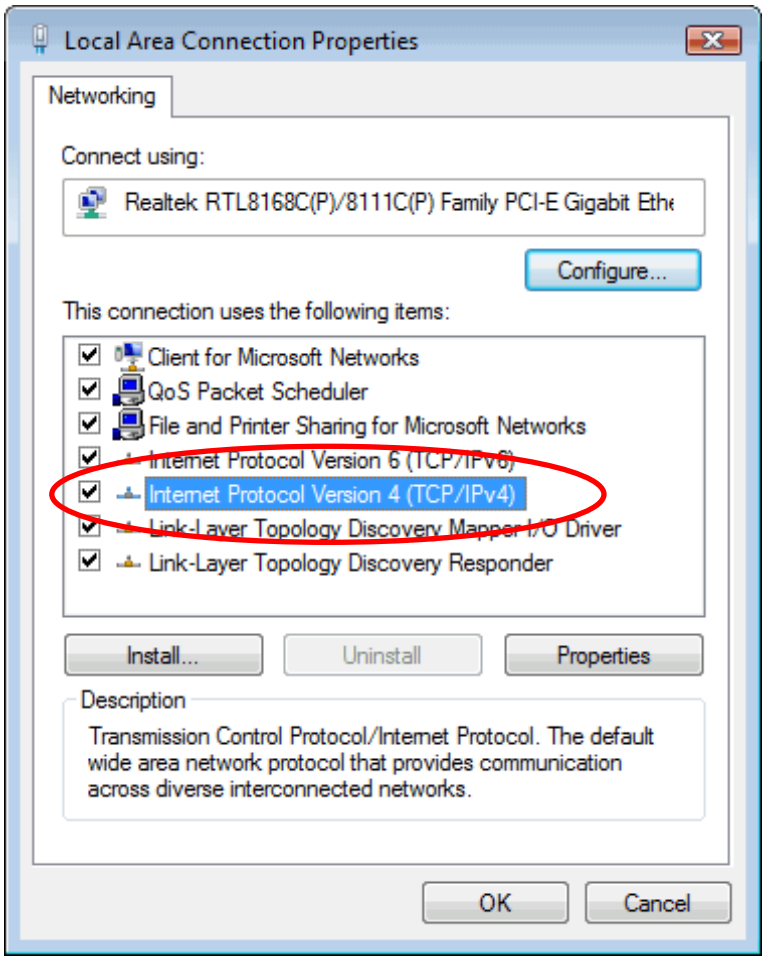
2. In the Manage network connections, click on "**Manage network connections**" to continue.



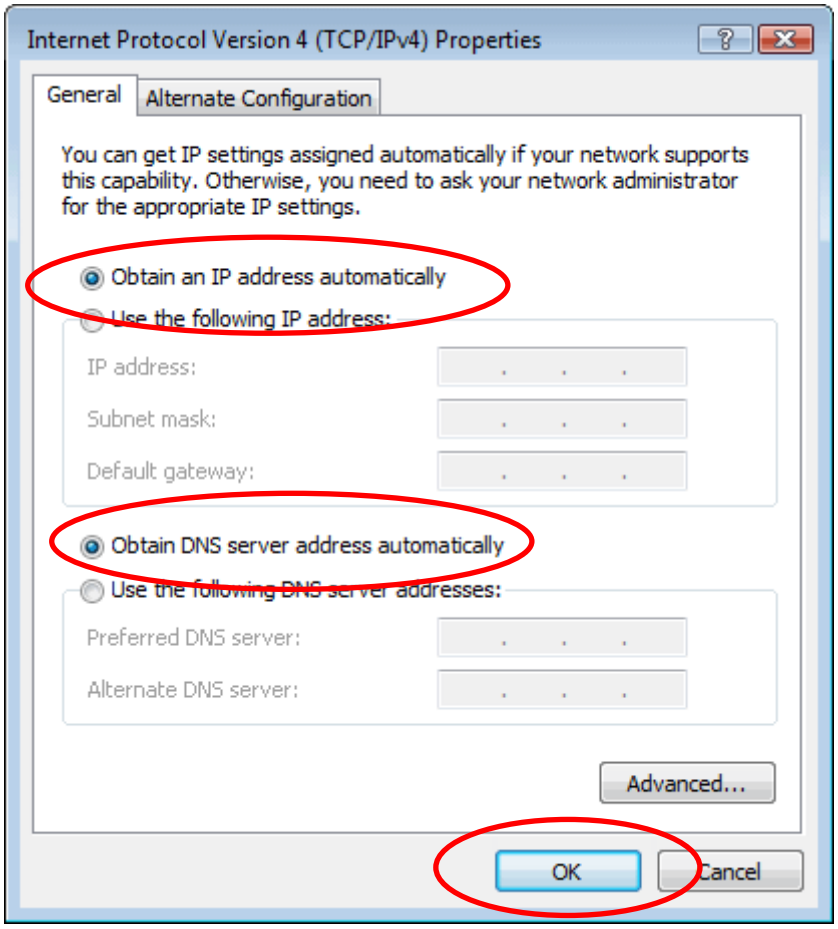
3. Single RIGHT click on "**Local Area connection**", then click "**Properties**".



4. The screen will display the information "**User Account Control**" and click "**Continue**" to continue.
5. Double click on "**Internet Protocol Version 4 (TCP/IPv4)**".

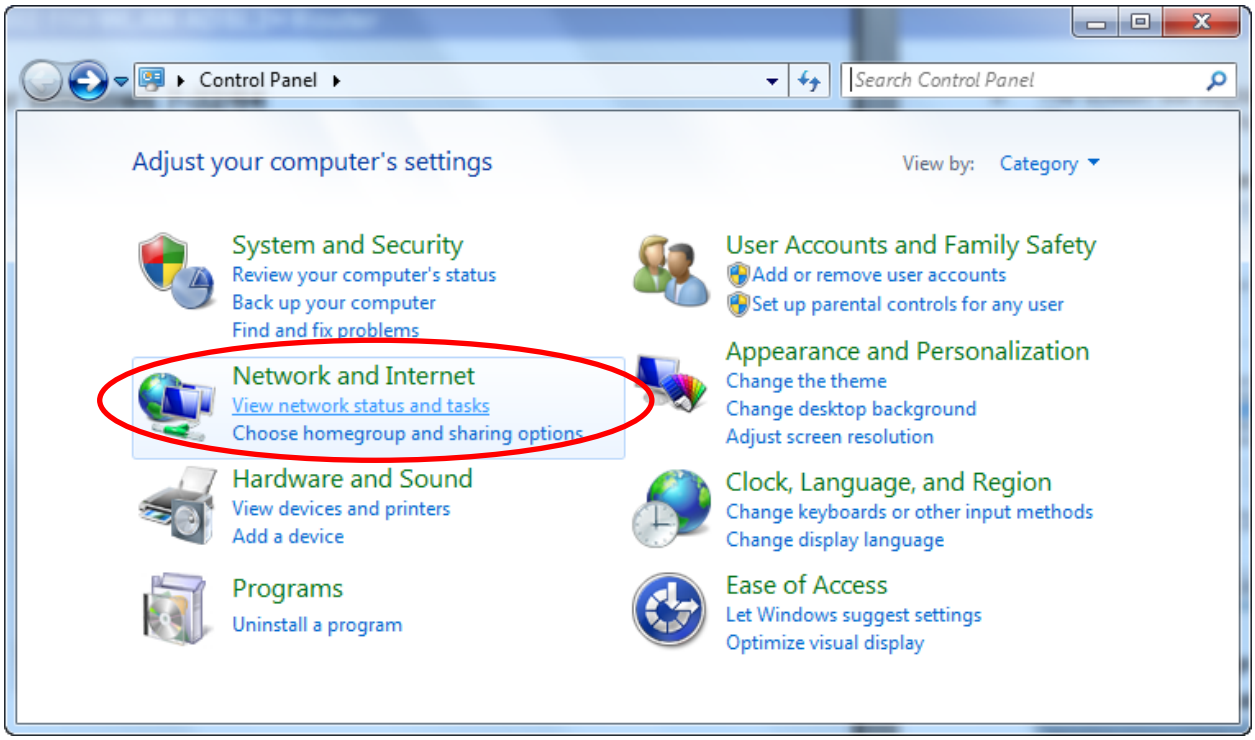


6. Check "**Obtain an IP address automatically**" and "**Obtain DNS server address automatically**" then click on "**OK**" to continue.

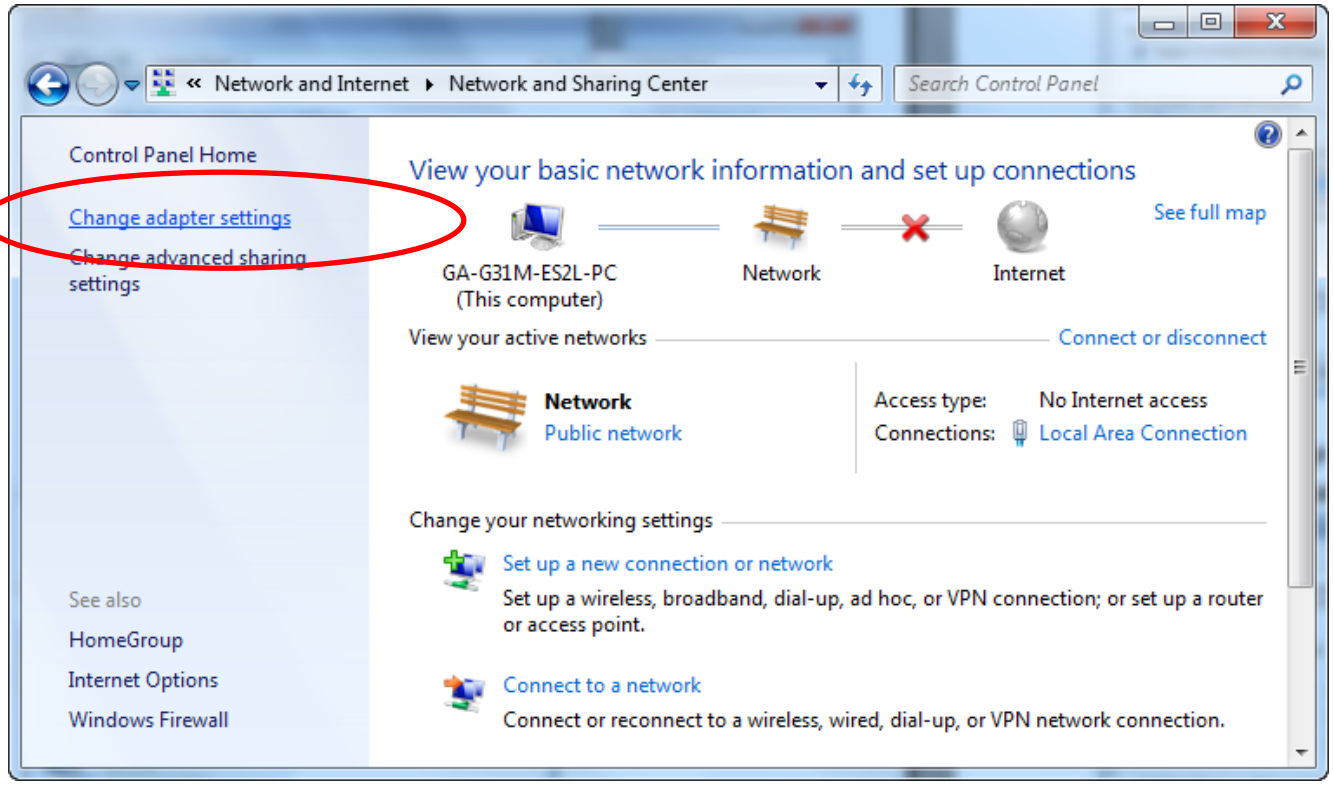


For Windows 7-32/64

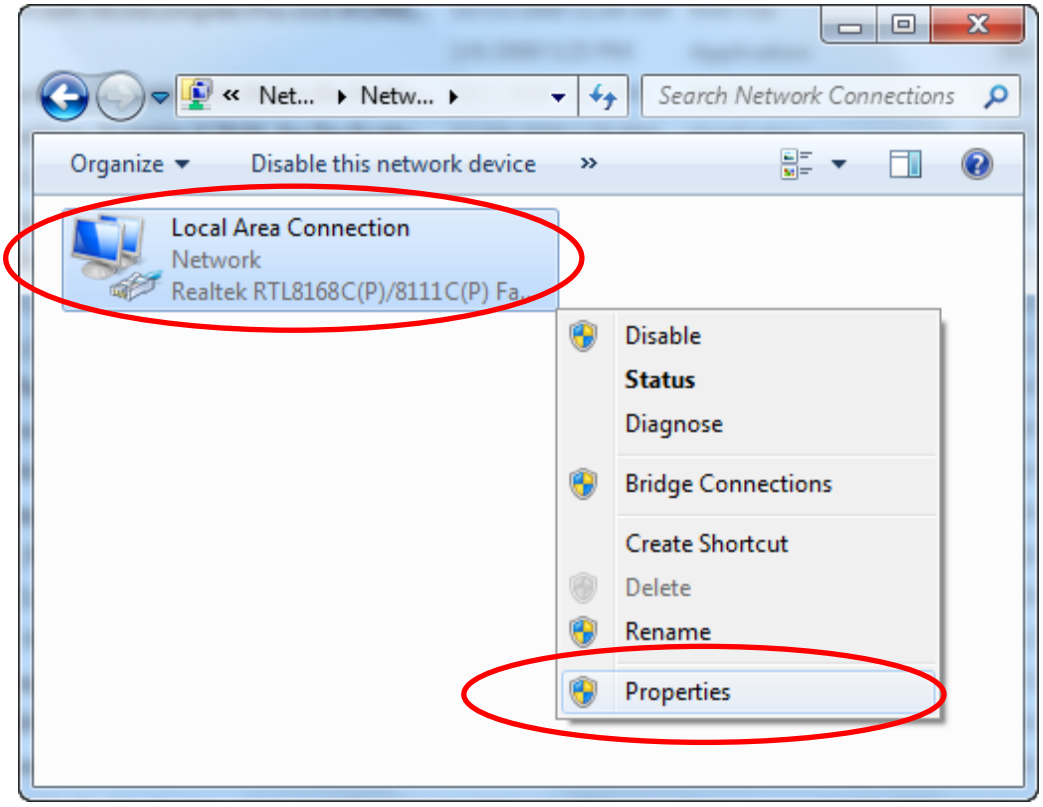
7. Click on "**Start**" -> "**Control Panel**" **(in Category View)** -> "**View network status and tasks**".



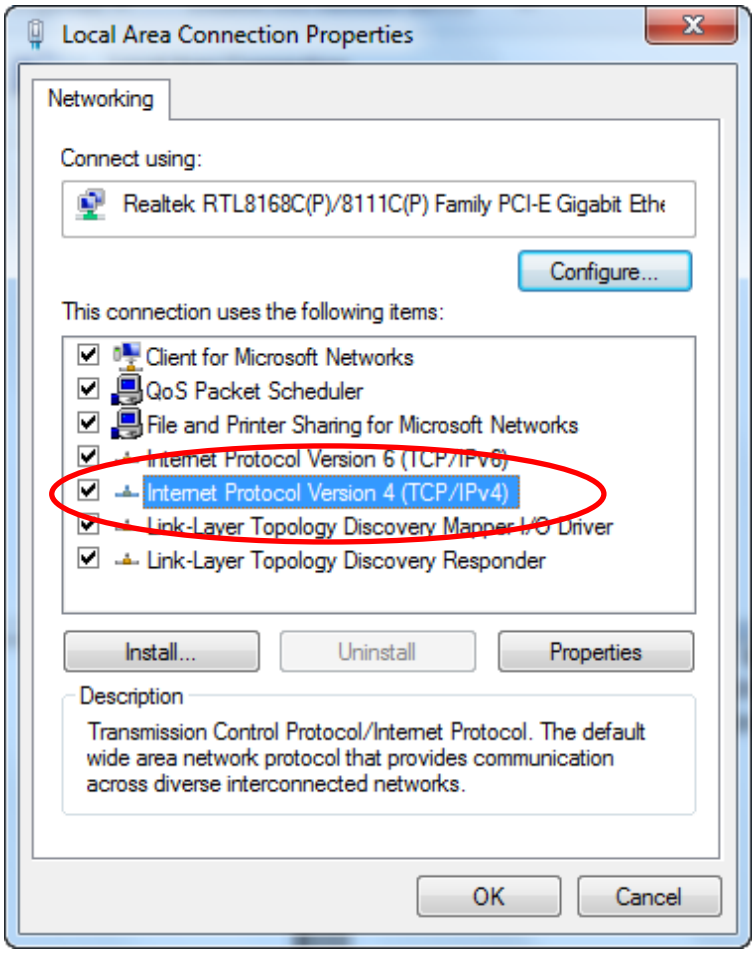
8. In the Control Panel Home, click on "**Change adapter settings**" to continue.



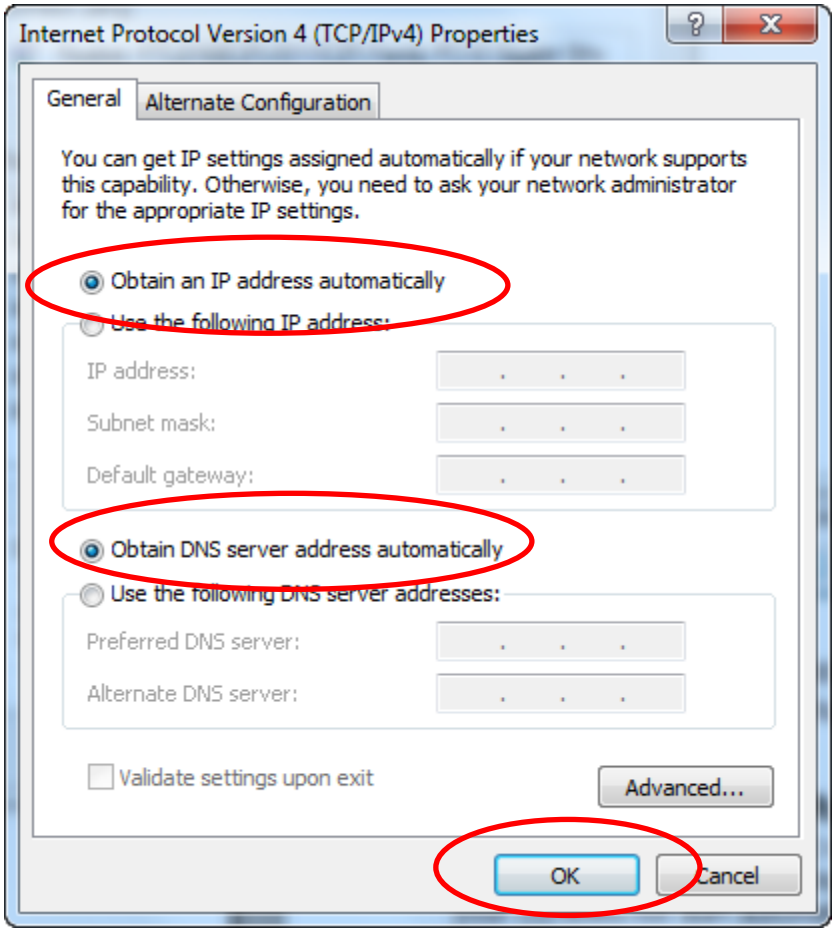
9. Single RIGHT click on "**Local Area Connection**", then click "**Properties**".



10. Double click on "**Internet Protocol Version 4 (TCP/IPv4)**".

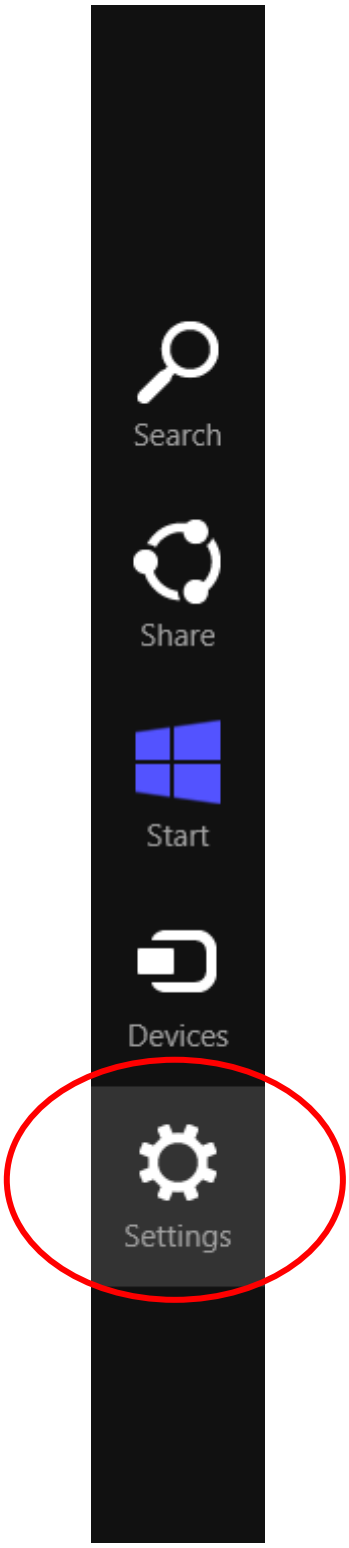


11. Check "**Obtain an IP address automatically**" and "**Obtain DNS server address automatically**" then click on "**OK**" to continue.

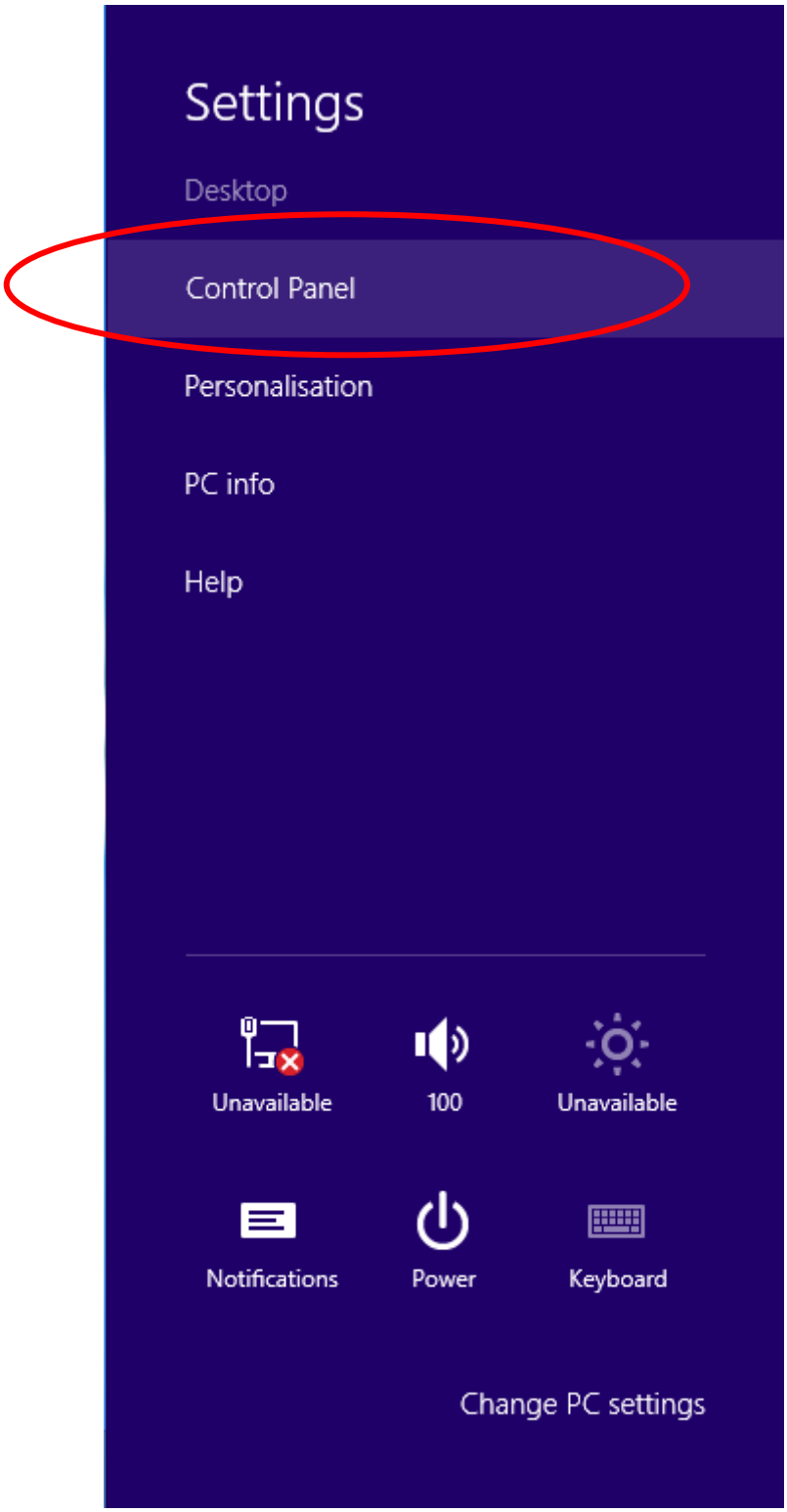


For Windows 8-32/64

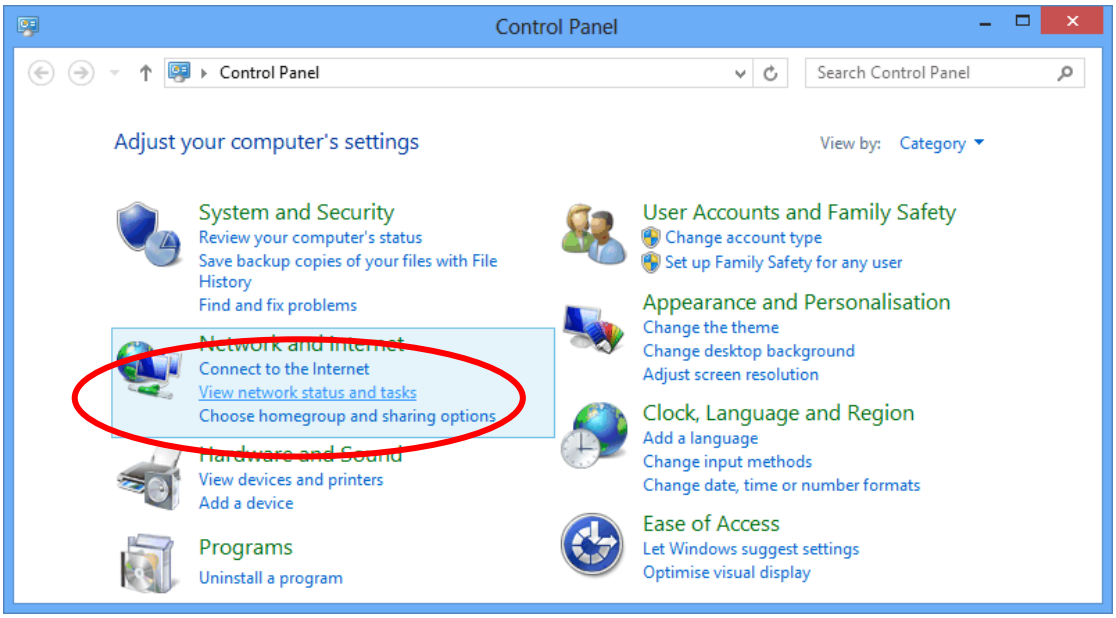
1. Move the mouse or tap to the upper right corner and click on "**Settings**".



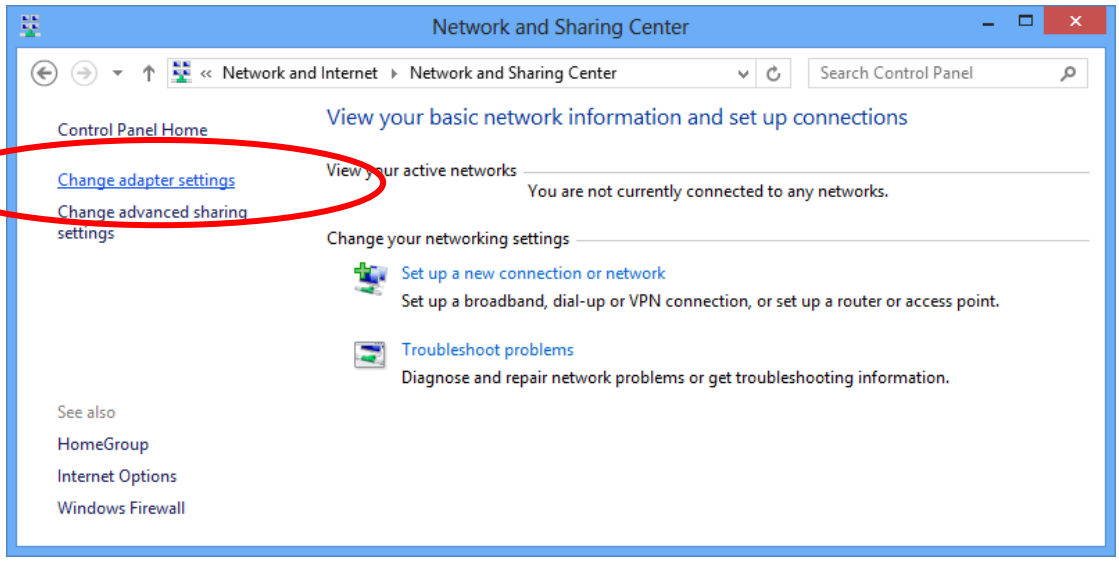
2. Click on "**Control Panel**".



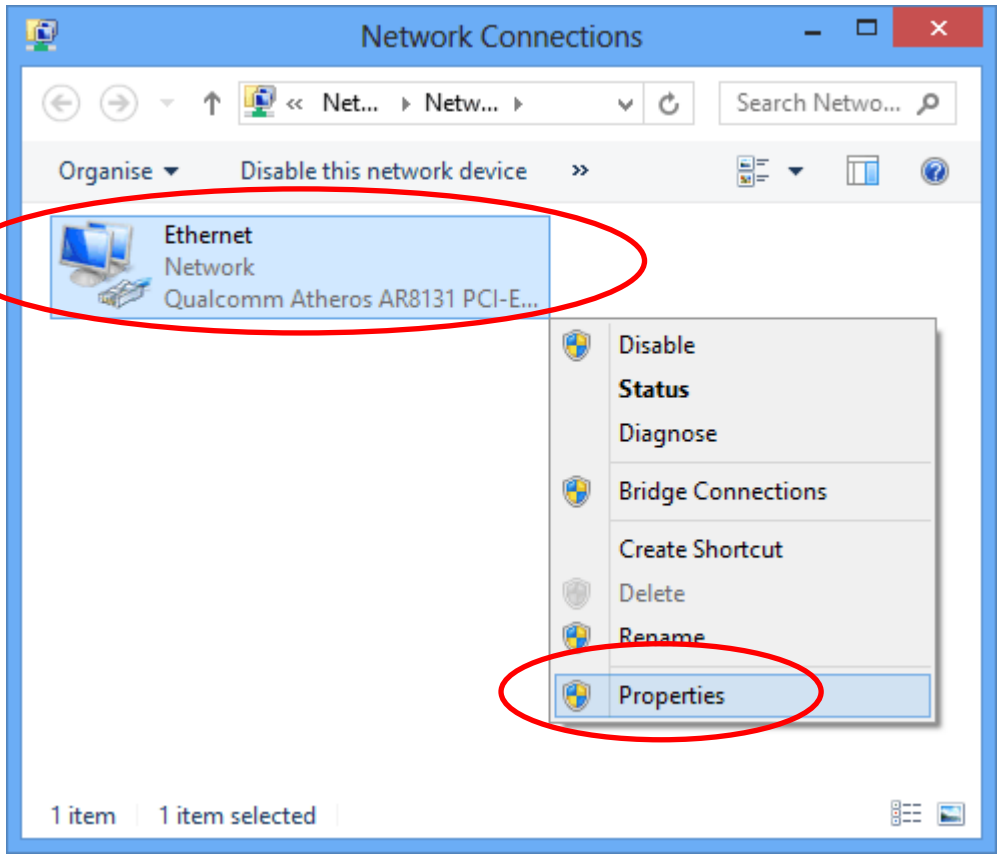
3. Click on "**View network status and tasks**".



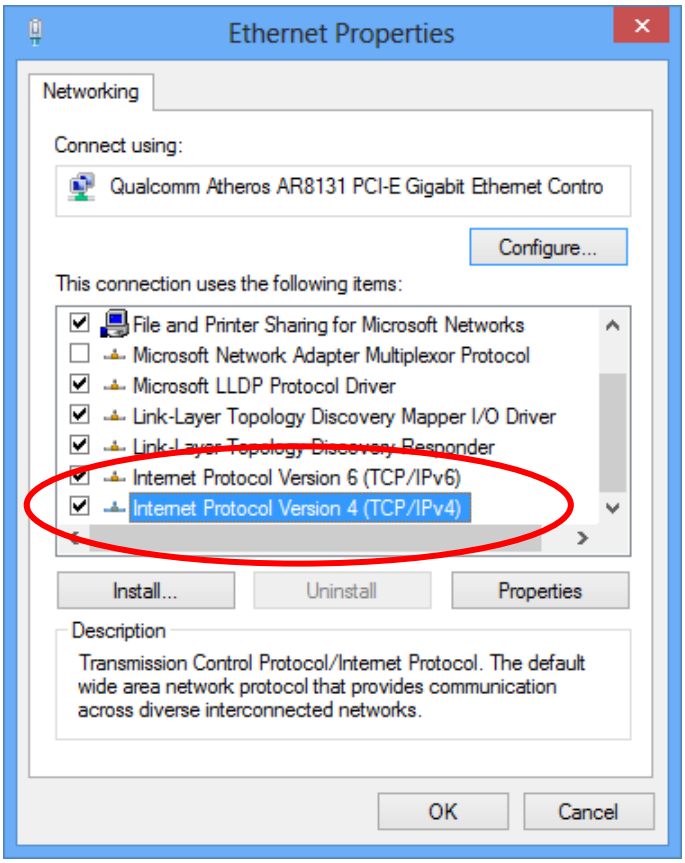
4. In the Control Panel Home, click on "**Change adapter settings**" to continue.



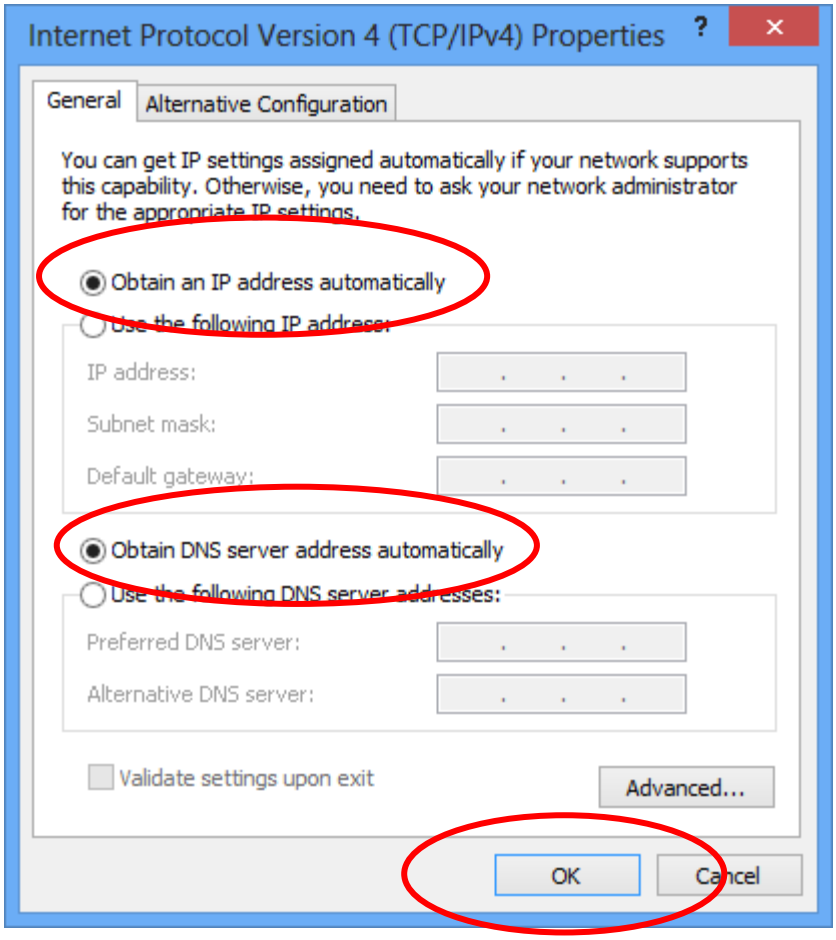
5. Single RIGHT click on "**Ethernet**", then click "**Properties**".



6. Double click on "**Internet Protocol Version 4 (TCP/IPv4)**".



7. Check "**Obtain an IP address automatically**" and "**Obtain DNS server address automatically**" then click on "**OK**" to continue.



4 Connecting your device

This chapter provides basic instructions for connecting the Wireless Gateway to a computer or LAN and to the Internet.

In addition to configuring the device, you need to configure the Internet properties of your computer(s). For more details, see the following sections:

- *Configuring Ethernet PCs*

This chapter assumes that you have already established a DSL/Cable service with your Internet service provider (ISP). These instructions provide a basic configuration that should be compatible with your home or small office network setup. Refer to the subsequent chapters for additional configuration instructions.

Connecting the Hardware

This section describes how to connect the device to the wall phone port, the power outlet and your computer(s) or network.

WARNING

Before you begin, turn the power off for all devices. *These include your computer(s), your LAN hub/switch (if applicable), and the Wireless Gateway.*

The diagram below illustrates the hardware connections. The layout of the ports on your device may vary from the layout shown. Refer to the steps that follow for specific instructions.

Step 1. Connect the Ethernet cable to LAN Port

Connect the supplied RJ45 Ethernet cable from your PC's Ethernet port to any of the 11n Repeater's LAN Port.

Step 2. Connect the 11n Repeater to your wall-mounted power outlet

WPS Pairing between 11n Repeater and Wireless xDSL/Cable Modem

This section describes how to do WPS Pairing between 11n Repeater and Wireless xDSL/Cable.

The diagram below illustrates the hardware connections. The layout of the ports on your device may vary from the layout shown. Refer to the steps that follow for specific instructions.

Step 1. Press WPS button on Wireless xDSL/Cable Modem.

Step 2. Press WPS button on 11n Repeater for 3 seconds and release WPS button. Now the WPS LED is blinking and the 11n Repeater is donig WPS Pairing with Wireless xDSL/Cable Modem.

Make sure to press the button within 120 seconds (2 minutes) after pressing the Wireless xDSL/Cable Modem's WPS button.

Step 3. Once the 11n Repeater finished doing WPS Pairing with Wireless xDSL/Cable Modem, the Wifi Signal Strength LED is ON. The status of Wifi signal strength LED varies depending on the Wifi signal strength between 11n Repeater and Wireless xDSL/Cable Modem.

Step 4. Check if the Wifi Signal Strength LED of 11n Repeater is ON, the 11n Repeater is connected and suitable for Internet Connections.

Step 5. Check if the Wifi Signal Strength is OFF, the 11n Repeater isn't connected and suitable for Internet Connections. Please repeat steps of WPS Pairing or follow next step to have it connected and suitable for Internet Connections.

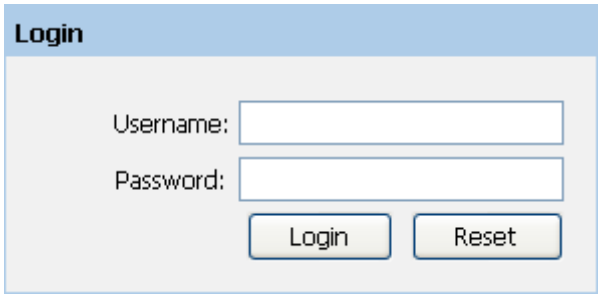
5 Advanced Configuration

Advanced Configuration

1. From any of the LAN computers connected to , launch your web browser, type the following URL in the web address (or location) box, and press [Enter] on your keyboard:

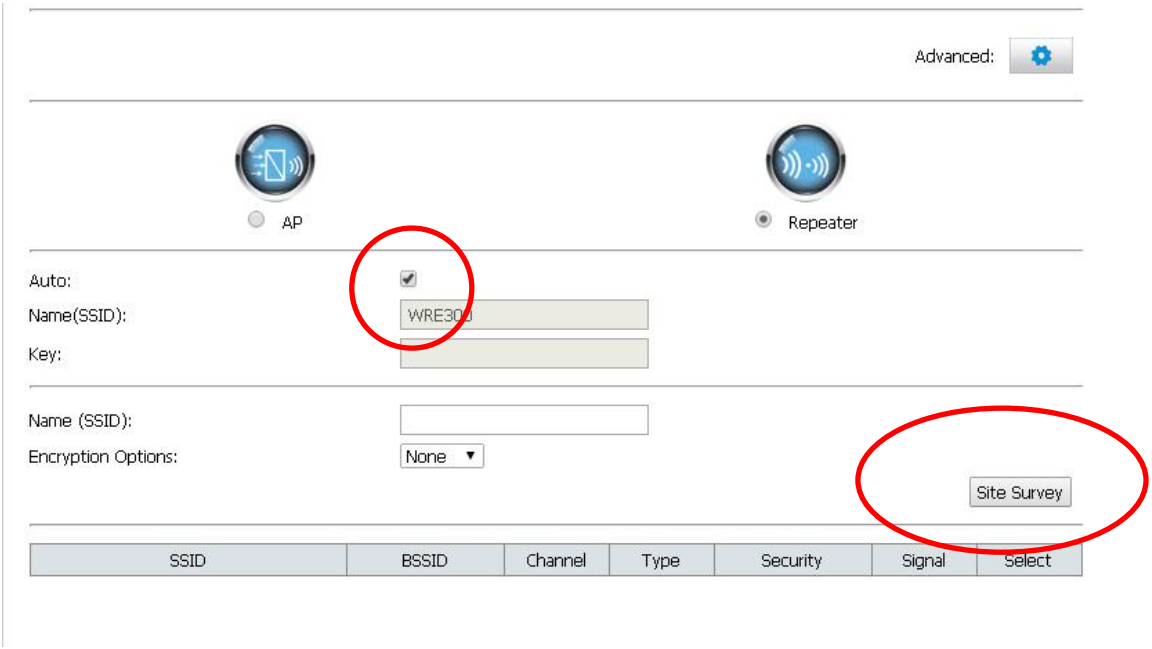
   http://10.0.0.2

2. Please enter the Login User Name: admin and Login Password: administrator and then click on Login button.

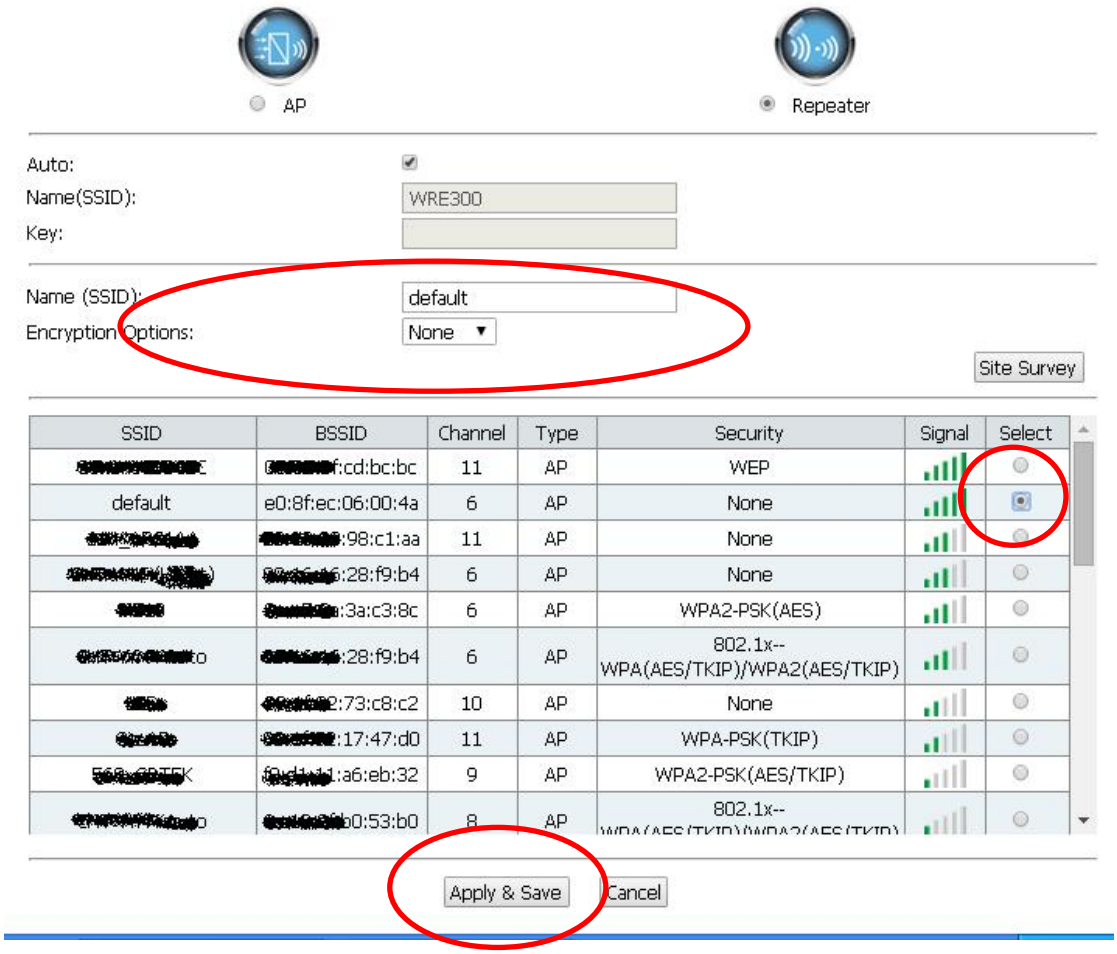


Repeater Mode (Extend your Wireless Network)

3. Check on "**Auto**" checkbox.
4. Click on "**Site Survey**" button and wait for 5 seconds for site surveying.

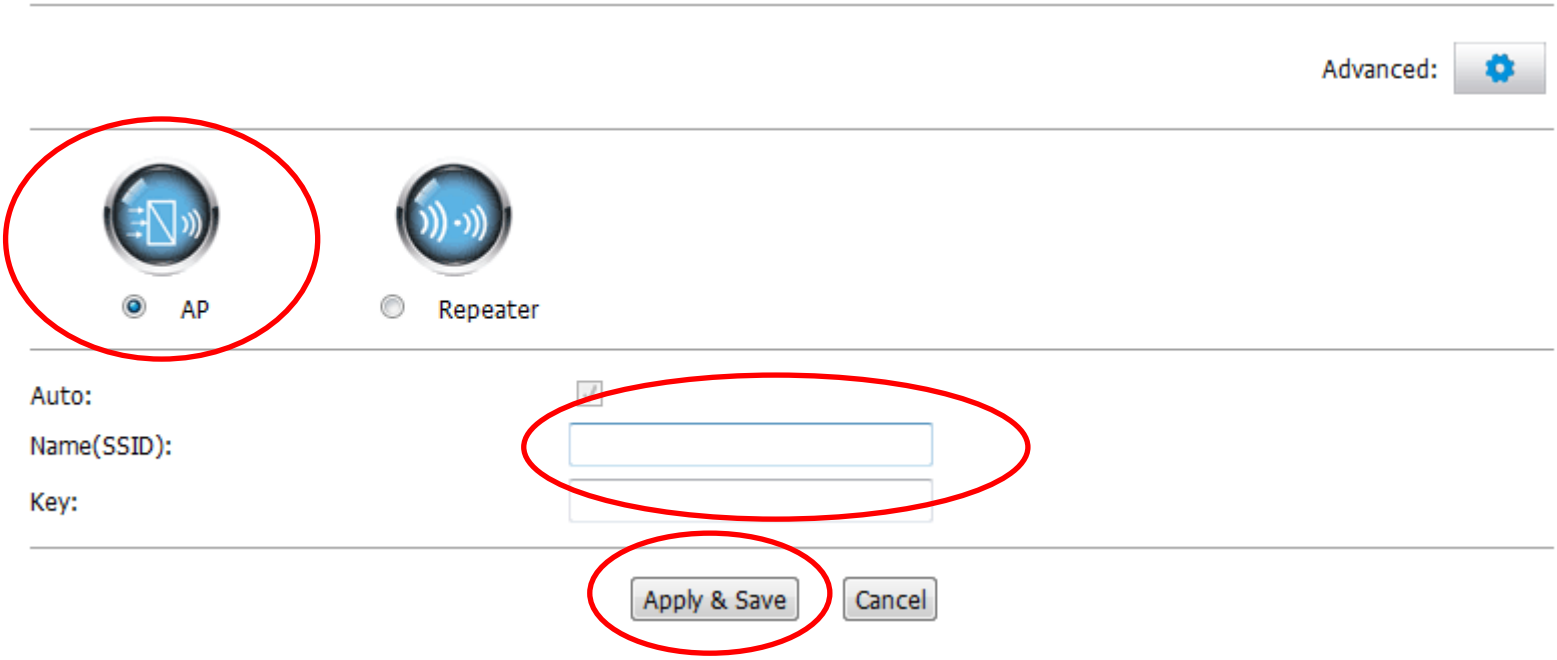


5. Check on "**Select**" ratio of SSID of the front AP and configure related parameters.
6. Click on "**Apply&Save**" button.

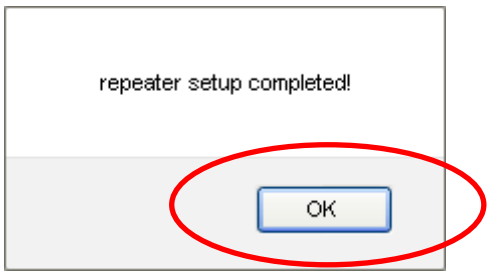

AP
Repeater
Auto:
Name(SSID):
WRE300
Key:
Name (SSID):
default
Encryption Options:
None
Site Survey
SSID
BSSID
Channel
Type
Security
Signal
Select
f:cd:bc:bc
11
AP
WEP
default
e0:8f:ec:06:00:4a
6
AP
None
:98:c1:aa
11
AP
None
6:28:f9:b4
6
AP
None
:3a:c3:8c
6
AP
WPA2-PSK(AES)
:28:f9:b4
6
AP
802.1x--
WPA(AES/TKIP)/WPA2(AES/TKIP)
2:73:c8:c2
10
AP
None
:17:47:d0
11
AP
WPA-PSK(TKIP)
1:a6:eb:32
9
AP
WPA2-PSK(AES/TKIP)
b0:53:b0
8
AP
802.1x--
Apply & Save
Cancel

AP Mode (Extend your Wired Network to allow wireless devices to connect your wired network using Wi-Fi)

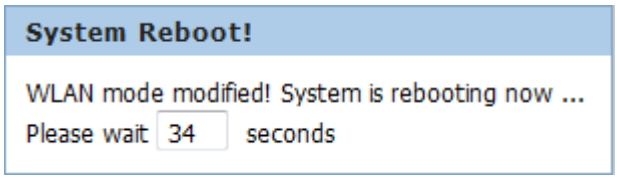
7. Check on "**AP**" checkbox.
8. Configure related parameters.
9. Click on "**Apply&Save**" button.



10. Click on "**OK**" button.



11. Click on "**OK**" button.



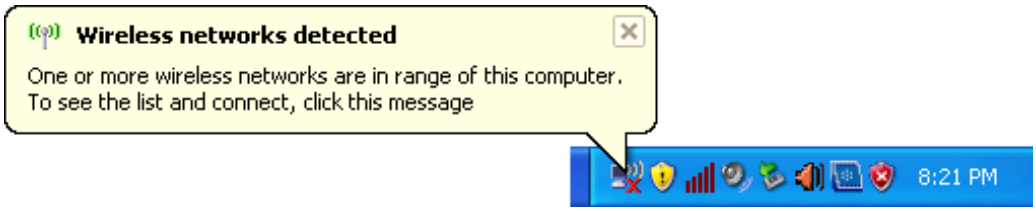
12. Please disconnect the Ethernet Cable from PC and connect it to the LAN port of xDSL/Cable Modem.

13. Now, the 11n Repeater has been configured completed, and suitable for Wireless and Internet Connections.

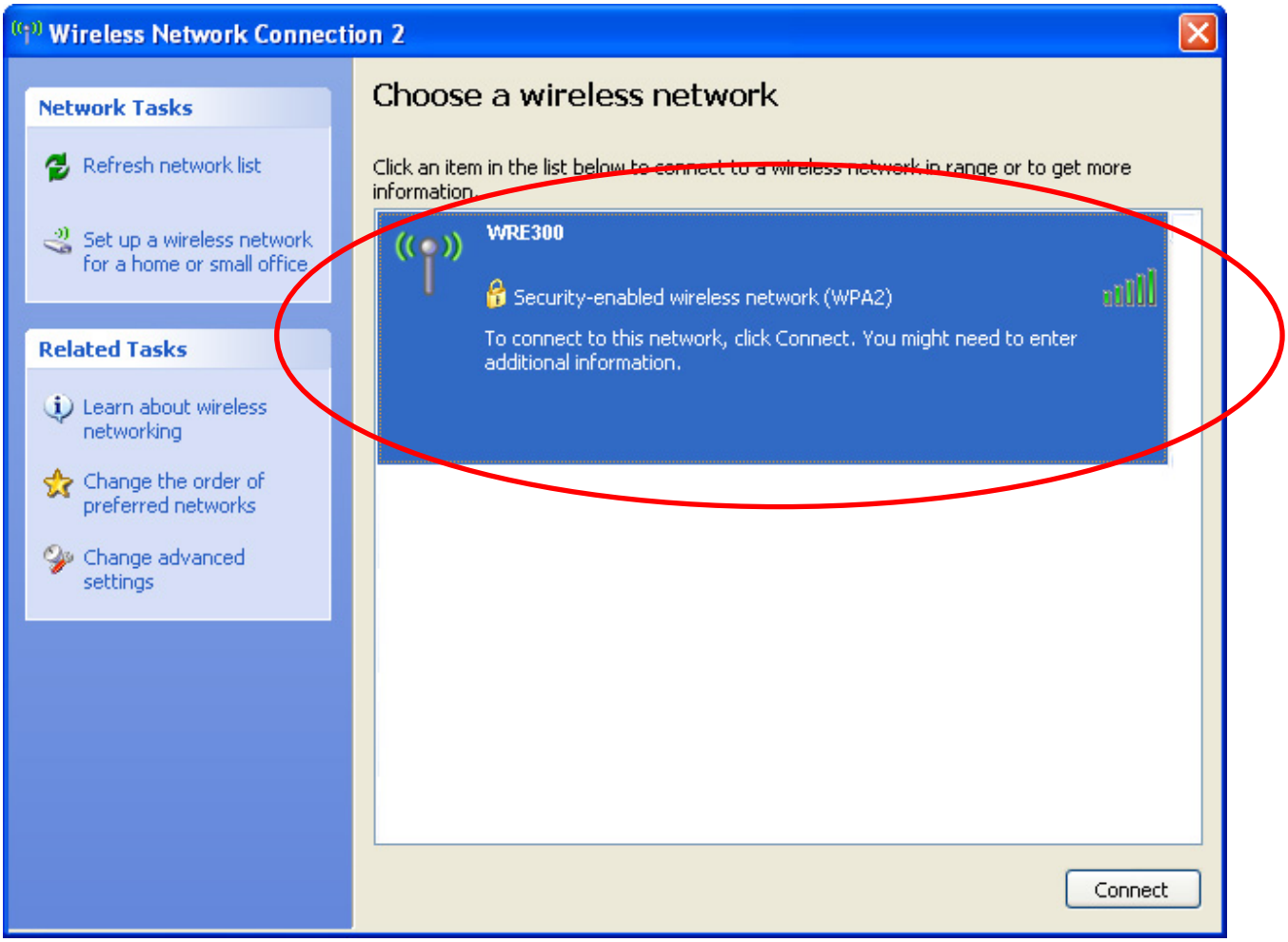
Wireless Connection

For easy installation it is saved to keep the settings. You can later change the wireless settings via the wireless configuration menu.

14. Double click on the wireless icon on your computer and search for the wireless network that you enter **SSID** name.



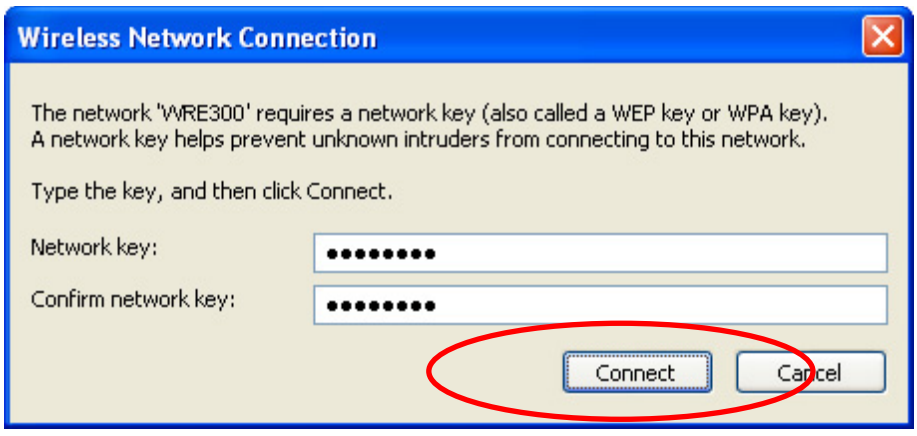
15. Click on the wireless network that you enter **SSID** name **(the default settings SSID = WRE300 which could be found on the bottom side of the device)** to connect.



16. If the wireless network isn't encrypted, click on "**Connect Anyway**" to connect.

17. If the wireless network is encrypted, enter your own wireless password at least 8 characters for example 12345678 in the **key** field / **Network key** field / **Confirm Network key** field **(the default settings Security Mode = None)**. You can later change this network key via the wireless configuration menu.

18. Click on "Connect" or "Apply".



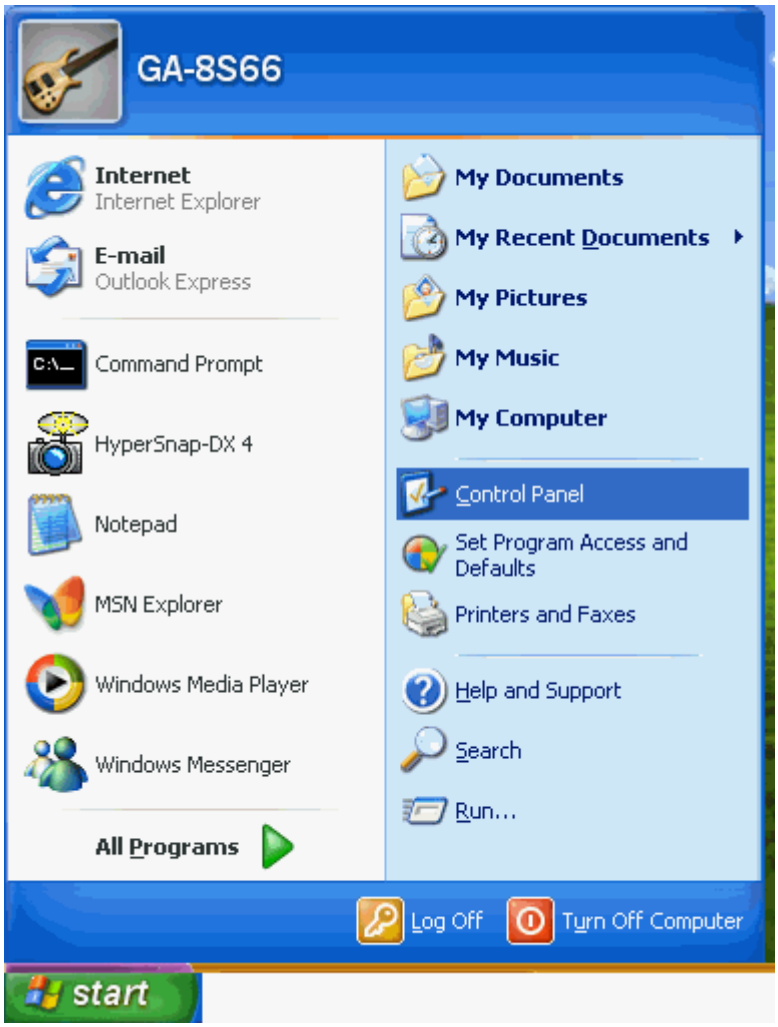
19. Now you are ready to use the Wireless Network to Internet or intranet.

6 What the Internet/WAN access of your own Network now is

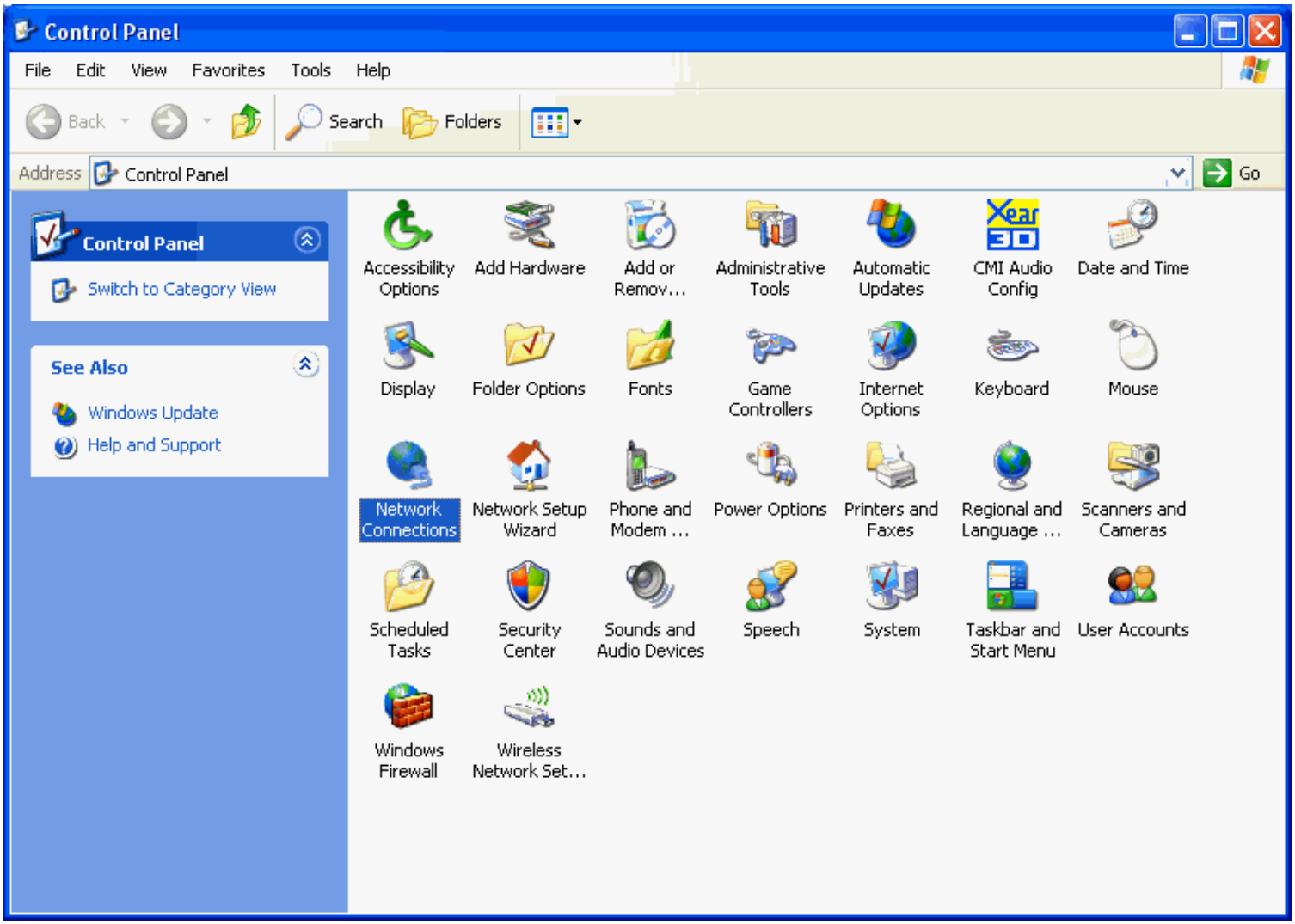
Now you could check what the Internet/WAN access of your network is to know how to configure the WAN port of Wireless Gateway.

Please follow steps below to check what the Internet/WAN access if your own Network is DHCP Client, Static IP or PPPoE Client.

1. Click Start -> Control Panel



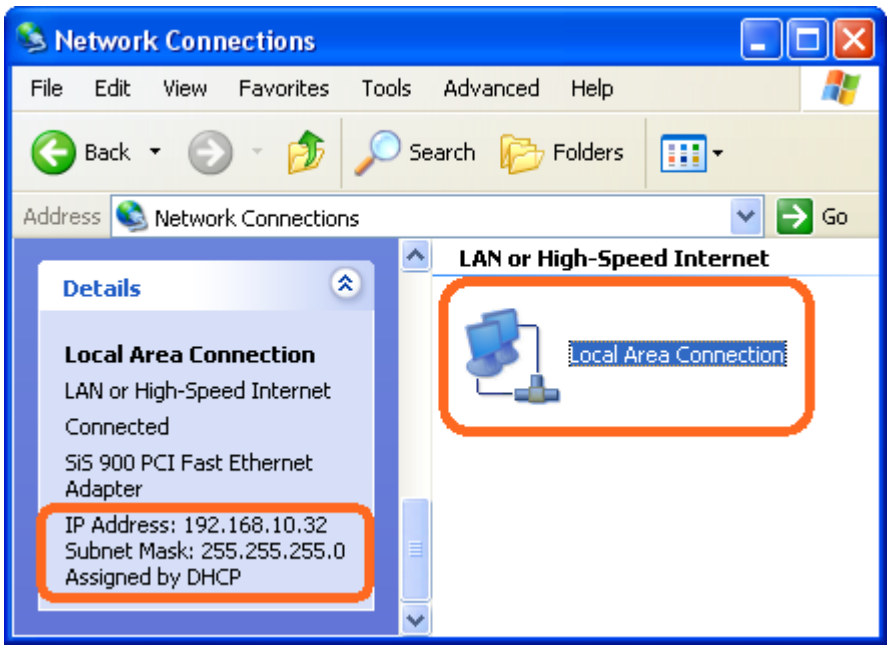
2. Double click *Network Connections*



Internet/WAN access is the DHCP client

If you cannot see any **Broadband Adapter** in the **Network Connections**, your Internet/WAN access is **DHCP Client** or **Static IP**.

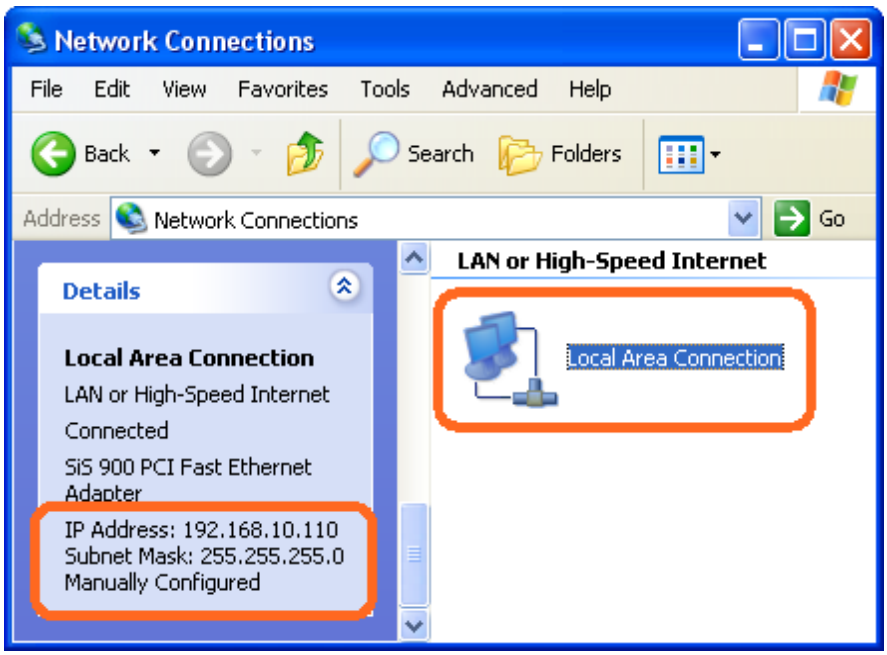
3. Click **Local Area Connection** in **LAN or High-Speed Internet** and you could see string **Assigned by DHCP** in Details.



Internet/WAN access is the Static IP

If you cannot see any **Broadband Adapter** in the **Network Connections**, your Internet/WAN access is **DHCP Client** or **Static IP**.

4. Click **Local Area Connection** in **LAN or High-Speed Internet** and you could see string **Manually Configured** in Details.



5. Right click **Local Area Connection** and click **Properties** and then you could get the IP settings in detail and write down the IP settings as follow:

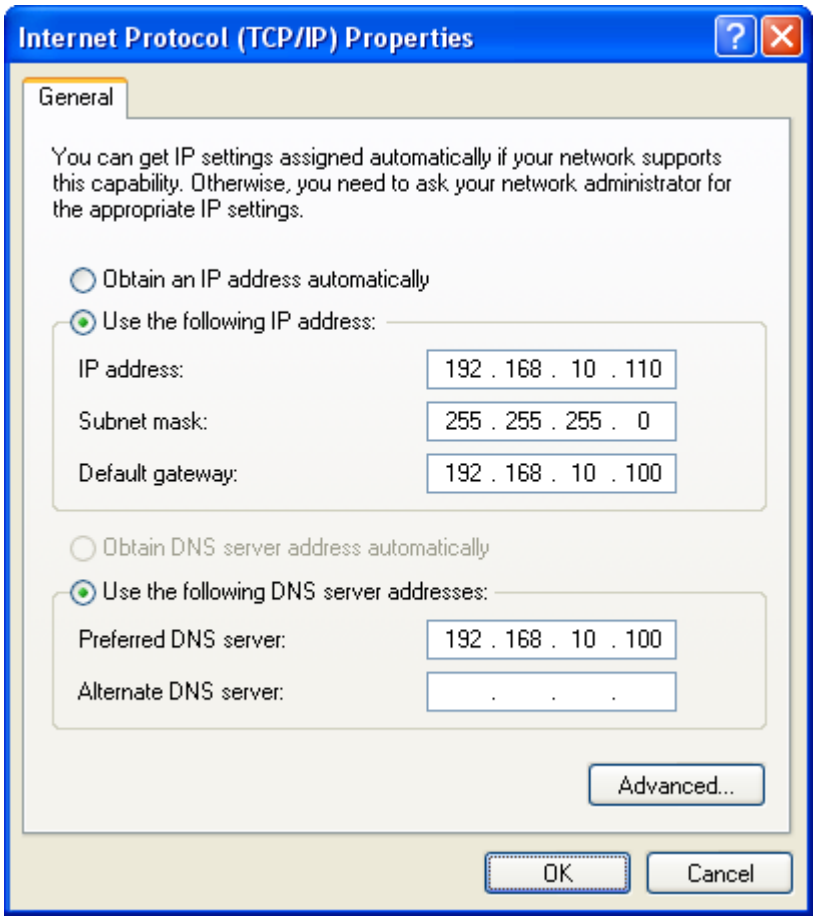
IP Address: 192.168.10.110

Subnet mask: 255.255.255.0

Default gateway: 192.168.10.100

Preferred DNS server: 192.168.10.100

Alternate DNS Server: If you have it, please also write it down.



Internet/WAN access is the PPPoE client

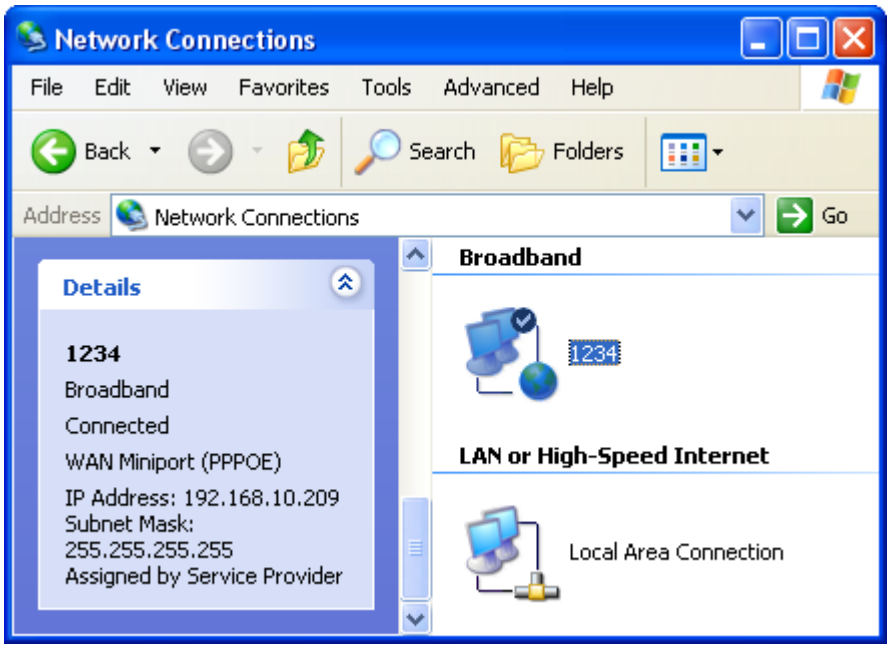
If you can see any **Broadband Adapter** in the **Network Connections**, your Internet/WAN access is **PPPoE Client**.

6. Click **Broadband Adapter** in **Broadband** and you could see string **Assigned by Service Provider** in Details.

For PPPoE configuration on Wireless Gateway, you'll need following information that you could get from your Telecom, or by your Internet Service Provider.

Username of PPPoE: 1234 for example

Password of PPPoE: 1234 for example



7 Getting Started with the Web pages

The Wireless Gateway includes a series of Web pages that provide an interface to the software installed on the device. It enables you to configure the device settings to meet the needs of your network. You can access it through your web browser from any PC connected to the device via the LAN ports.

Accessing the Web pages

To access the Web pages, you need the following:

- A PC or laptop connected to the LAN port on the device.
- A web browser installed on the PC. The minimum browser version requirement is Internet Explorer v4 or Netscape v4. For the best display quality, use latest version of Internet Explorer, Netscape or Mozilla Fire fox. From any of the LAN computers, launch your web browser, type the following URL in the web address (or location) box, and press [Enter] on your keyboard:

  http://10.0.0.2

  The Status homepage for the web pages is displayed:

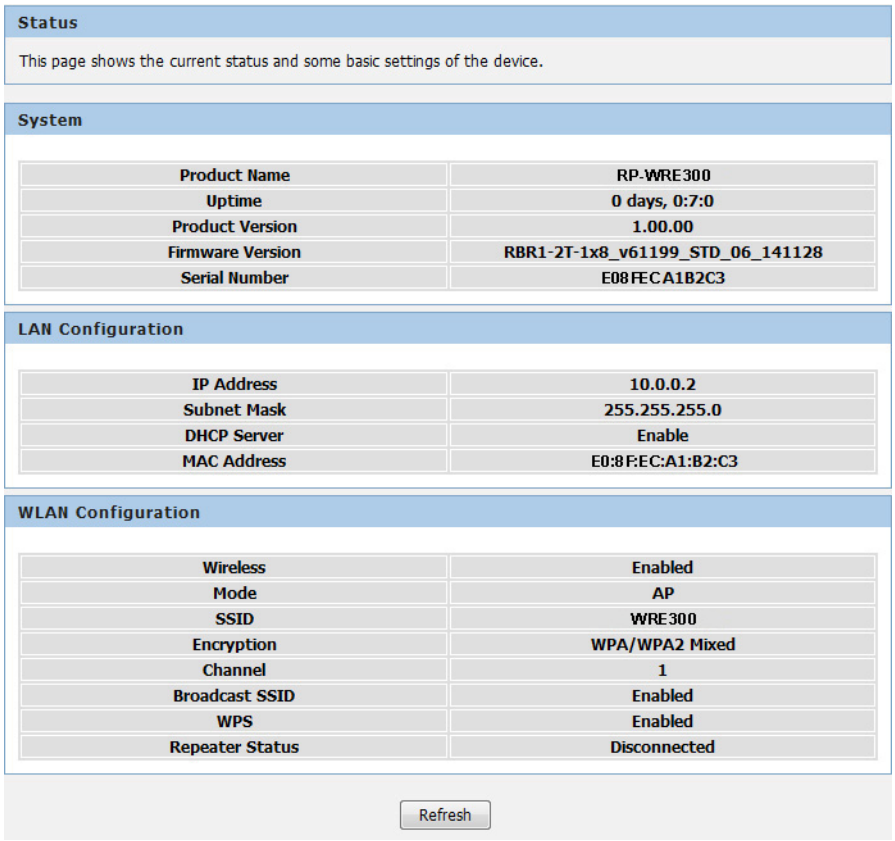


Figure 2: Homepage

The first time that you click on an entry from the left-hand menu, a login box is displayed. You must enter your username and password to access the pages.

A login screen is displayed:

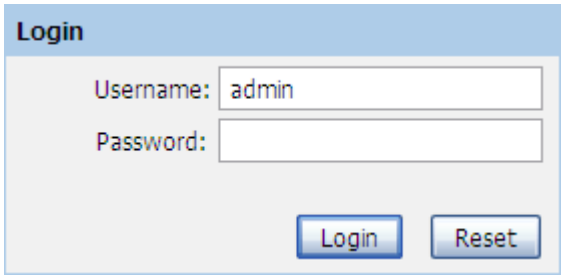


Figure 3: Login screen

1. Enter your user name and password. The first time you log into the program, use these defaults:

User Name:	**admin**
Password:	**administrator**

Note

You can change the password at any time or you can configure your device so that you do not need to enter a password. See Password.

2. Click on OK. You are now ready to configure your device.

This is the first page displayed each time you log in to the Web pages.

Note

If you receive an error message or the Welcome page is not displayed, see Troubleshooting Suggestions.

Testing your Setup

Once you have connected your hardware and configured your PCs, any computer on your LAN should be able to use the DSL /Cable connection to access the Internet.

To test the connection, turn on the device, wait for 30 seconds and then verify that the LEDs are illuminated as follows:

Table 1. LED Indicators

Label	Color	Function
POWER	green	On: device is powered on Off: device is powered off
WLAN	green	On: WLAN link established and active Blink: Valid Wireless packet being transferred
LAN	green	On: LAN link established and active Off: No LAN link Blink: Valid Ethernet packet being transferred

If the LEDs illuminate as expected, test your Internet connection from a LAN computer. To do this, open your web browser, and type the URL of any external website (such as *http://www.yahoo.com*). The LED labeled *WAN* should blink rapidly and then appear solid as the device connects to the site.

If the LEDs do not illuminate as expected, you may need to configure your Internet access settings using the information provided by your ISP. For details, see *Internet Access*. If the LEDs still do not illuminate as expected or the web page is not displayed, see *Troubleshooting Suggestions* or contact your ISP for assistance.

Default device settings

In addition to handling the xDSL / Cable modem connection to your ISP, the Wireless Gateway can provide a variety of services to your network. The device is preconfigured with default settings for use with a typical home or small office network.

The table below lists some of the most important default settings; these and other features are described fully in the subsequent chapters. If you are familiar with network configuration, review these settings to verify that they meet the needs of your network. Follow the instructions to change them if necessary. If you are unfamiliar with these settings, try using the device without modification, or contact your ISP for assistance.

WARNING

We strongly recommend that you contact your ISP prior to changing the default configuration.

Option	Default Setting	Explanation/Instructions
WAN Port IP Address	DHCP Client	This is the temporary public IP address of the WAN port on the device. It is an unnumbered interface that is replaced as soon as your ISP assigns a 'real' IP address. See *Network Settings -> WAN Interface*.
LAN Port IP Address	Assigned static IP address: 10.0.0.2 Subnet mask: 255.255.255.0	This is the IP address of the LAN port on the device. The LAN port connects the device to your Ethernet network. Typically, you will not need to change this address. See *Network Settings -> LAN Interface*.
DHCP (Dynamic Host Configuration Protocol)	DHCP server enabled with the following pool of addresses: 10.0.0.3 through 10.0.0.250	The Wireless Gateway maintains a pool of private IP addresses for dynamic assignment to your LAN computers. To use this service, you must have set up your computers to accept IP information dynamically, as described in *Configuring Ethernet PCs*.

8 Quick Setup

The *Quick Setup* page displays useful information about the setup of your device, including:

- details of the device's Wireless settings

To display this page:

From the head menu, click on *Setup*. The following page is displayed:

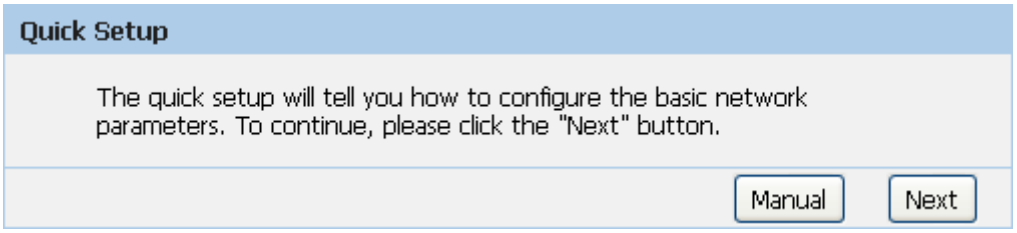


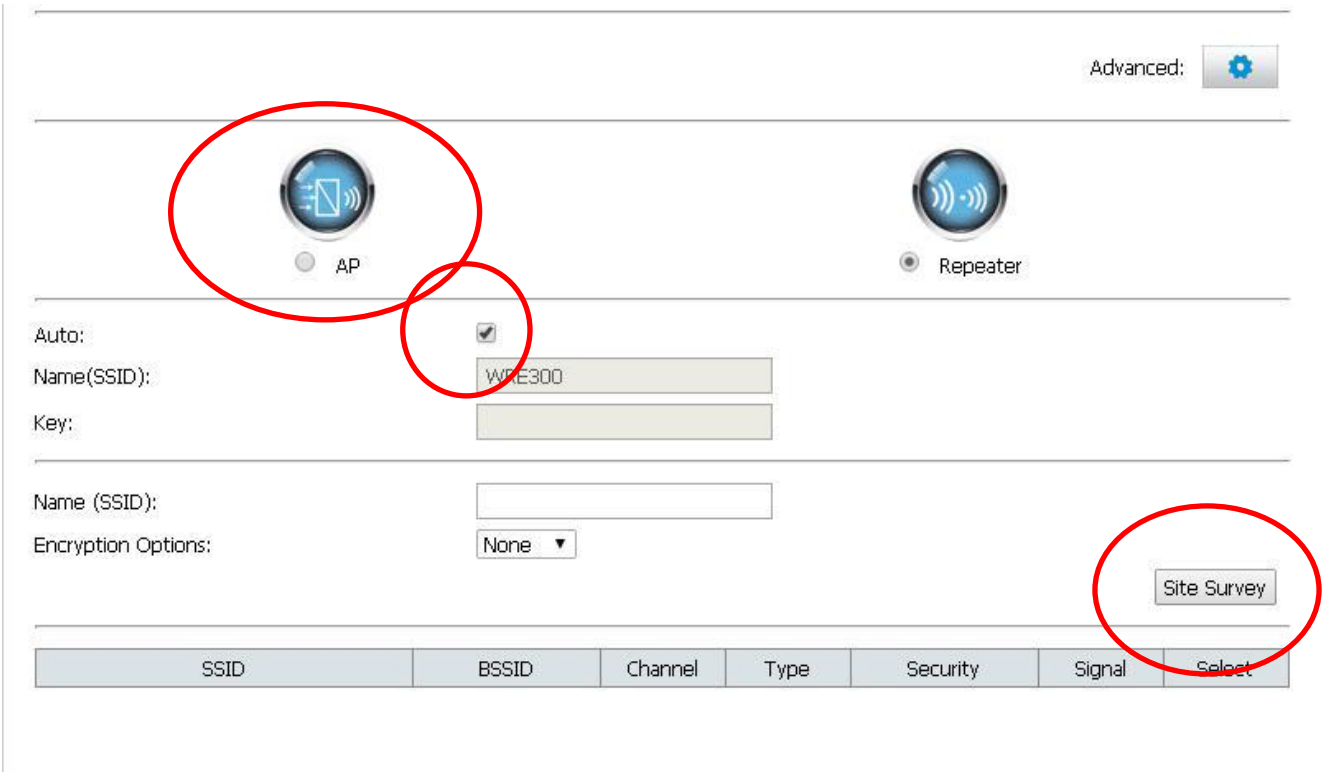
Figure 4: Quick Setup page

Repeater Mode (Extend your Wireless Network)

*Check on **Repeater*** ratio

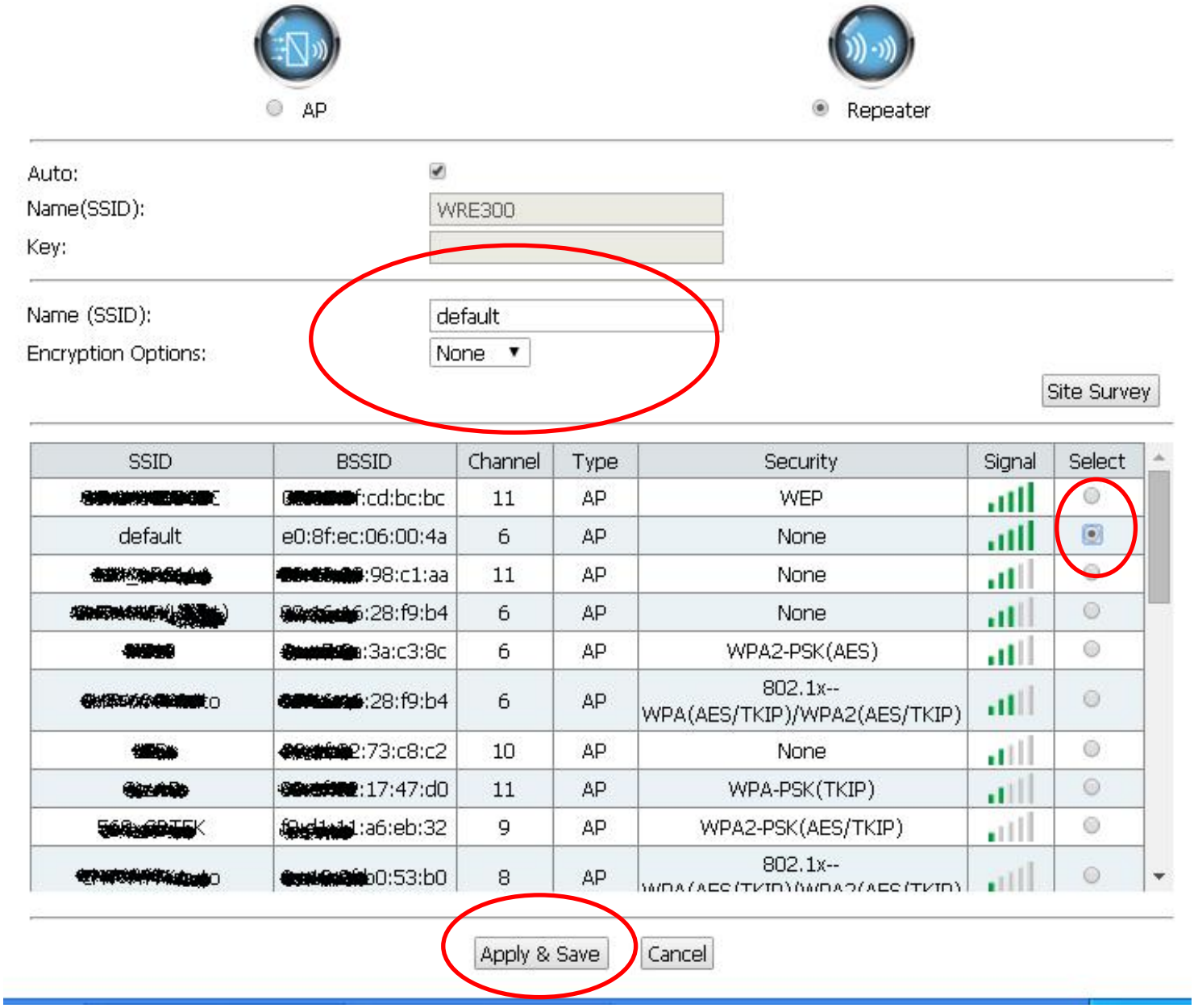
*Check on **Auto** checkbox.*

*Click on **Site Survey** button and wait for 5 seconds for site surveying.*

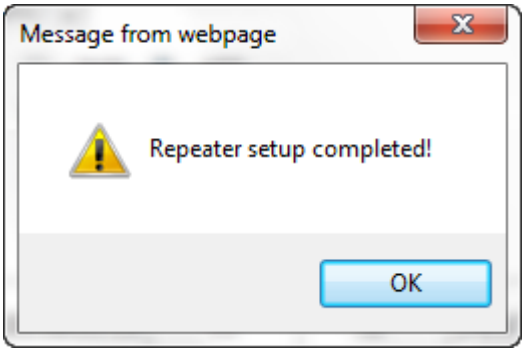


Check on Select ratio of SSID of the front AP and configure related parameters.

*Click on **Apply&Save** button*



3. Repeater setup completed!!
4. Click on OK

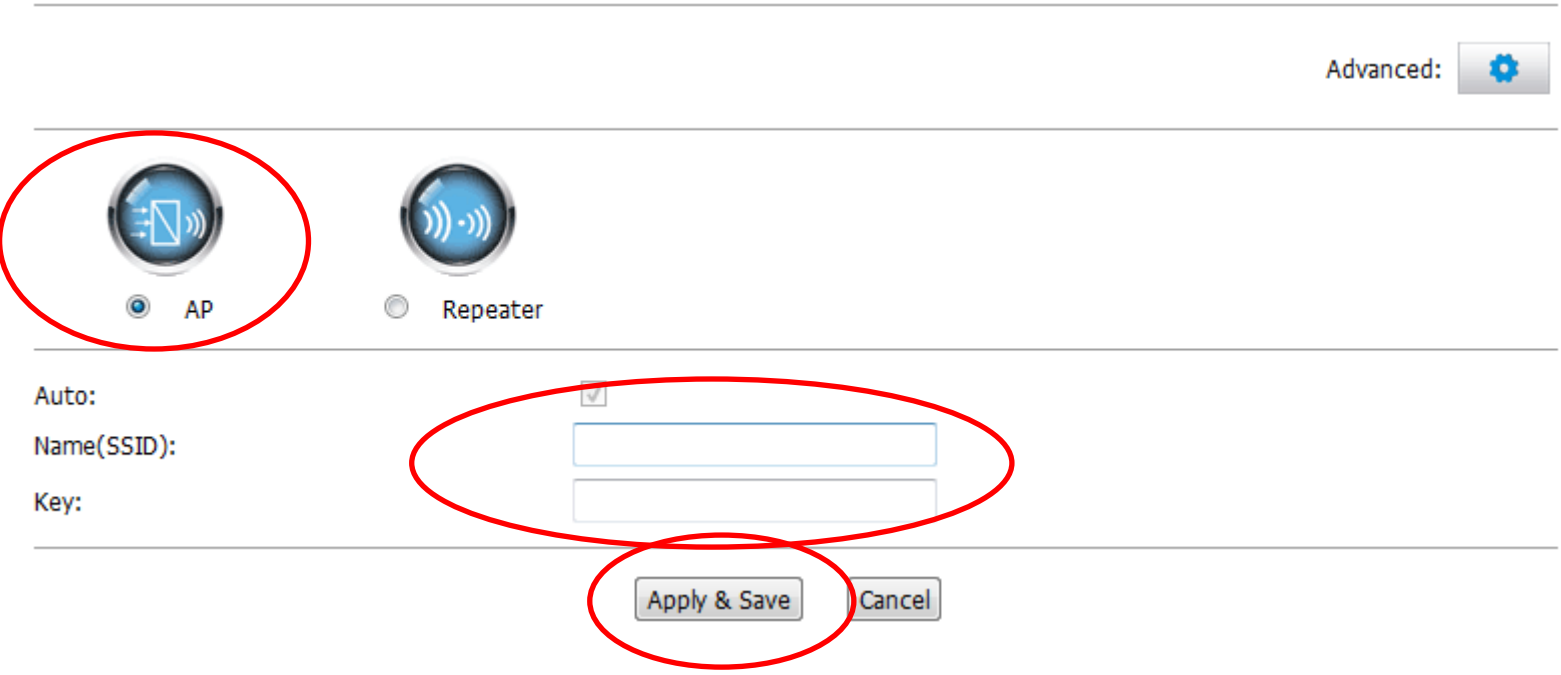


AP Mode (Extend your Wired Network to allow wireless devices to connect your wired network using Wi-Fi)

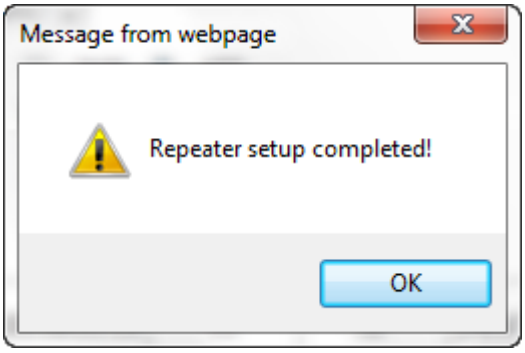
*Check on **AP** checkbox.*

Configure related parameters.

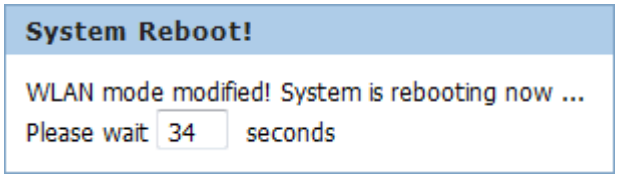
*Click on **Apply&Save** button*



5. Repeater setup completed!!
6. Click on **OK**



7. WLAN mode modified! System is rebooting now ...Please wait 35 seconds. (If you don't see this screen pop up, just skip this step. This screen will pop up when you change the mode between Repeater and AP mode)



9 LAN Interface

This chapter is to configure the parameters for local area network which connects to the LAN port of your Access Point. Here you may change the setting for IP address, subnet mask, DHCP, etc...

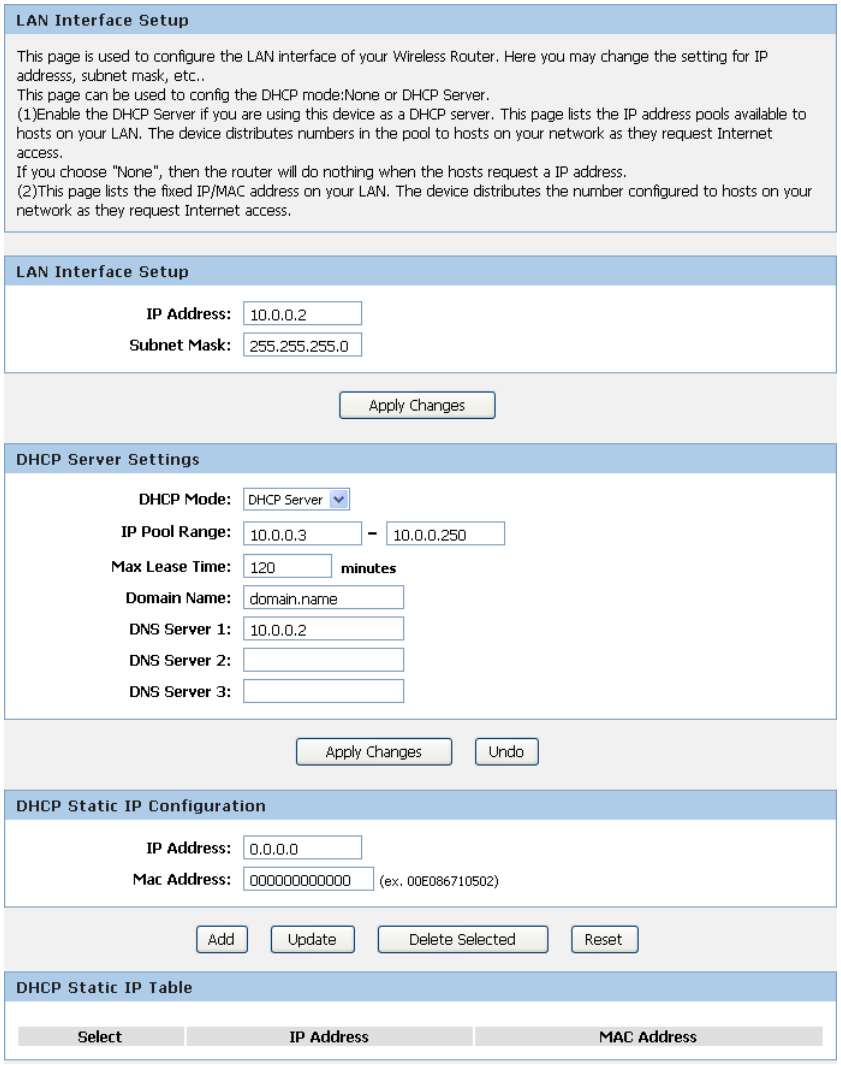
Note

You should only change the addressing details if your ISP asks you to, or if you are familiar with network configuration. In most cases, you will not need to make any changes to this configuration.

LAN Interface Setup

To check the configuration of LAN Interface:

1. From the *Setup* menu, click on *Local Network*. The following page is displayed:

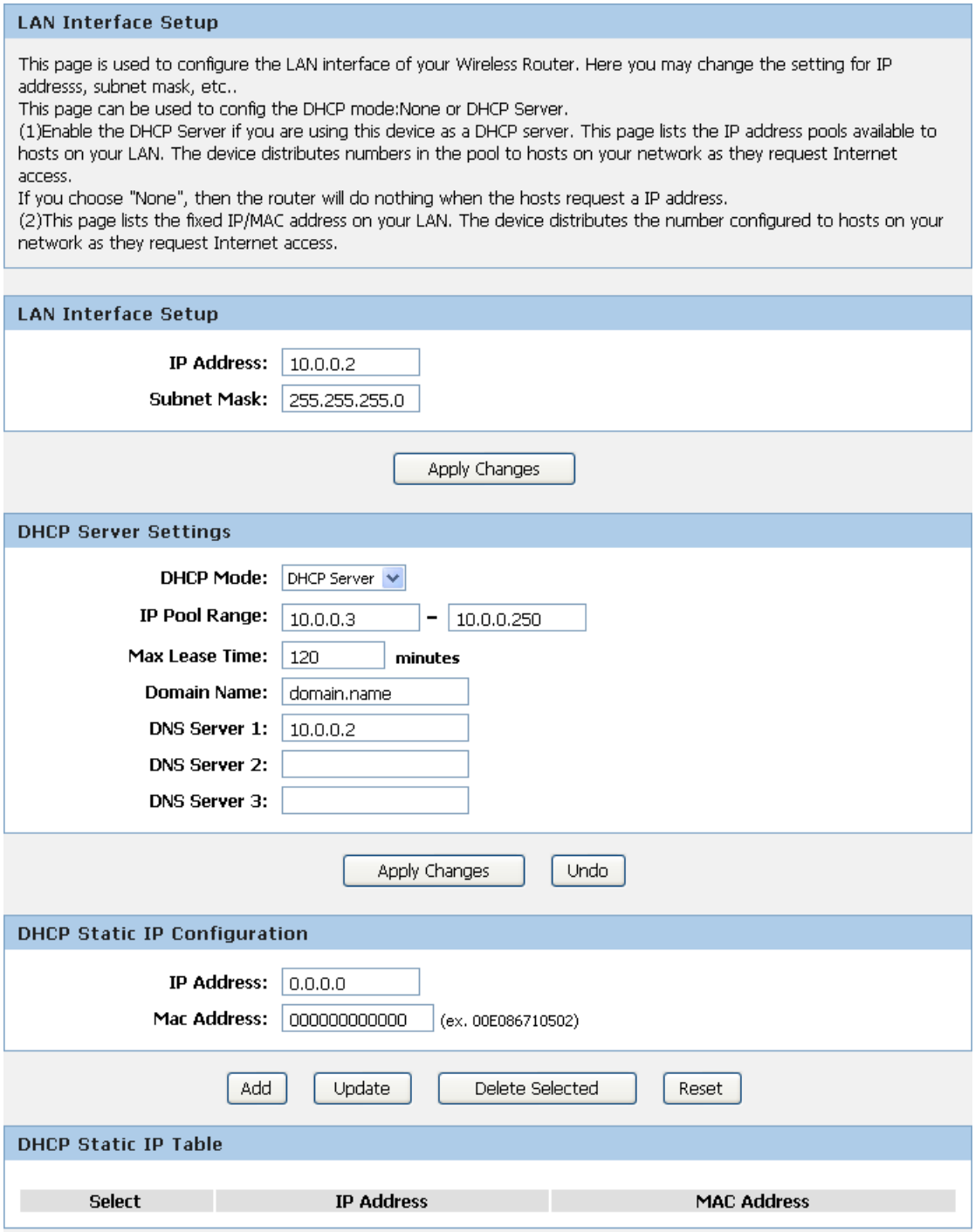

LAN Interface Setup
This page is used to configure the LAN interface of your Wireless Router. Here you may change the setting for IP addresss, subnet mask, etc..
This page can be used to config the DHCP mode:None or DHCP Server.
(1)Enable the DHCP Server if you are using this device as a DHCP server. This page lists the IP address pools available to hosts on your LAN. The device distributes numbers in the pool to hosts on your network as they request Internet access.
If you choose "None", then the router will do nothing when the hosts request a IP address.
(2)This page lists the fixed IP/MAC address on your LAN. The device distributes the number configured to hosts on your network as they request Internet access.
LAN Interface Setup
IP Address: 10.0.0.2
Subnet Mask: 255.255.255.0
Apply Changes
DHCP Server Settings
DHCP Mode: DHCP Server
IP Pool Range: 10.0.0.3 - 10.0.0.250
Max Lease Time: 120 minutes
Domain Name: domain.name
DNS Server 1: 10.0.0.2
DNS Server 2:
DNS Server 3:
Apply Changes
Undo
DHCP Static IP Configuration
IP Address: 0.0.0.0
Mac Address: 000000000000 (ex. 00E086710502)
Add
Update
Delete Selected
Reset
DHCP Static IP Table
Select
IP Address
MAC Address

Field	Description
IP Address	**The IP address of your router on the local area network. Your local area network settings are based on the address assigned here.**
Subnet Mask	**The subnet mask of your router on the local area network.**
DHCP Mode	**Once your router is properly configured and DHCP Server is enabled, the DHCP Server will manage the IP addresses and other network configuration information for computers and other devices connected to your Local Area Network. There is no need for you to do this yourself.** **The computers (and other devices) connected to your LAN also need to have their TCP/IP configuration set to "DHCP" or "Obtain an IP address automatically".**
IP Pool Range	**These two IP values (from and to) define a range of IP addresses that the DHCP Server uses when assigning addresses to computers and devices on your Local Area Network. Any addresses that are outside of this range are not managed by the DHCP Server; these could, therefore, be used for manually configured devices or devices that cannot use DHCP to obtain network address details automatically.** **Your router, by default, has a static IP address of 192.168.0.1. This means that addresses 192.168.0.2 to 192.168.0.254 can be made available for allocation by the DHCP Server.**
Max Lease Time	**The amount of time that a computer may have an IP address before it is required to renew the lease. The lease functions just as a lease on an apartment would. The initial lease designates the amount of time before the lease expires. If the tenant wishes to retain the address when the lease is expired then a new lease is established. If the lease expires and the address is no longer needed then another tenant may use the address.**
Domain Name	**Domain name for the dhcp server scope.**
DNS Servers	**DNS Server address for the dhcp server scope.**
IP Address	**The IP address to be configured for your computer or device on the local area network.For example, 192.168.0.2.**
Mac Address	**The mac address of your computer or device on the local area network.**

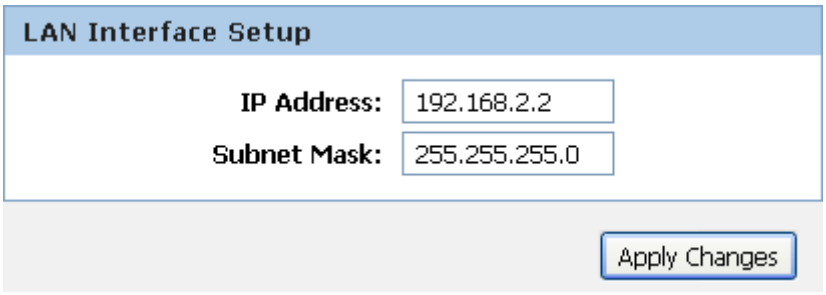
Changing the LAN IP address and subnet mask

To Change the configuration of LAN Interface:

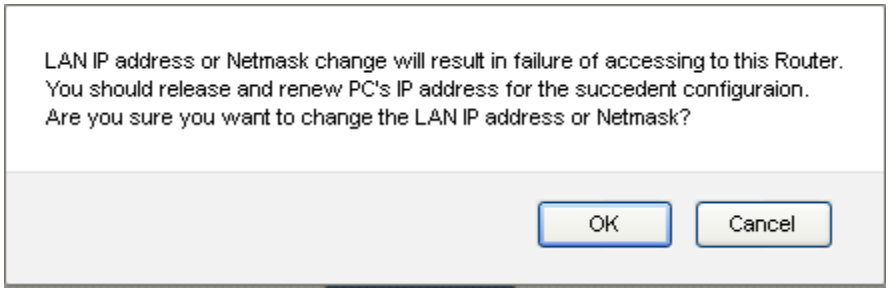
1. From the *Setup* menu, click on *Local Network*. The following page is displayed:



2. Change the *IP Address and Subnet Mask*.
3. Click *Apply Changes*.



4. Click *OK*.



5. Type IP Address and *Change default LAN port IP address*.
6. Click in the *IP Address and Subnet Mask* box and type a new IP Address and Subnet Mask.
7. Change the *default DHCP Client Range*.
8. Click *Apply Changes*.

You may also need to renew your DHCP lease:

Windows 95/98

a. Select **Run...** from the **Start** menu.

b. Enter **winipcfg** and click **OK**.

c. Select your ethernet adaptor from the pull-down menu

d. Click **Release All** and then **Renew All**.

e. **Exit** the winipcfg dialog.

Windows NT/Windows 2000/Windows XP

a. Bring up a command window.

b. Type **ipconfig /release** in the command window.

c. Type **ipconfig /renew**.

d. Type **exit** to close the command window.

Linux

a. Bring up a shell.

b. Type **pump -r** to release the lease.

c. Type **pump** to renew the lease.

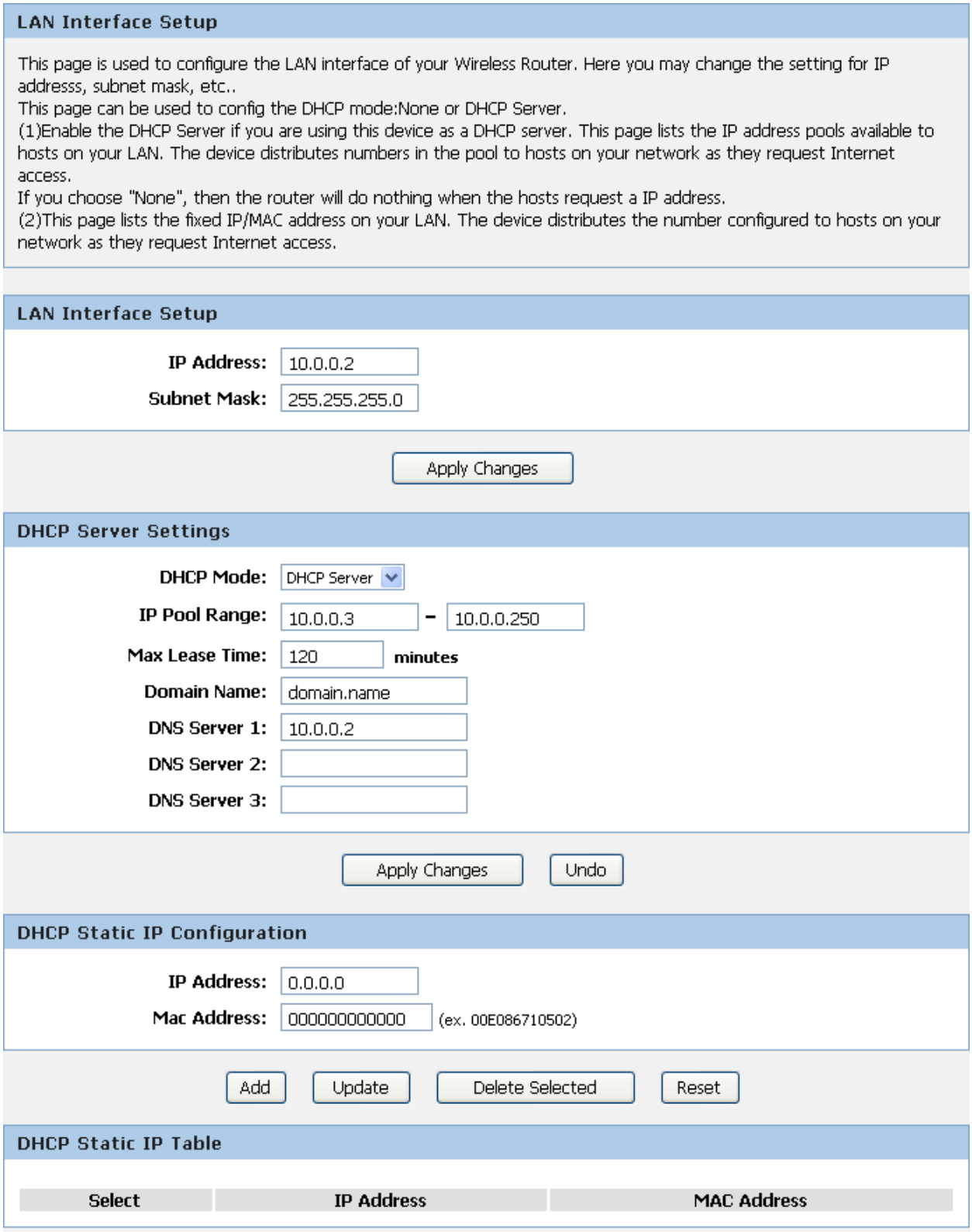
Note

If you change the LAN IP address of the device while connected through your Web browser, you will be disconnected. You must open a new connection by entering your new LAN IP address as the URL.

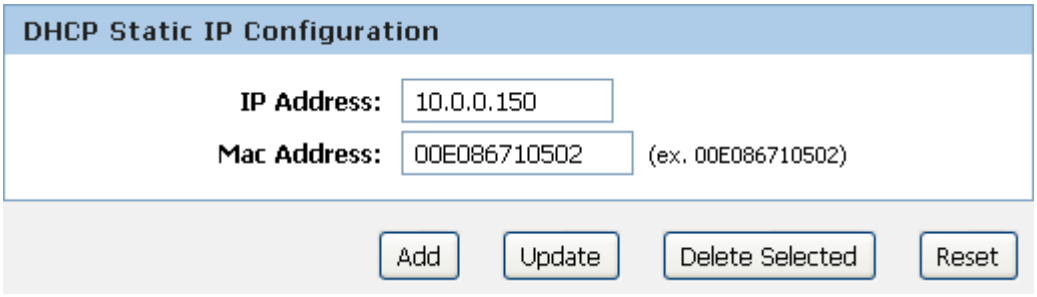
DHCP Static IP Configuration

If you need to assign static ip for your computer or device on the local area network, configure static ip with the mac address.:

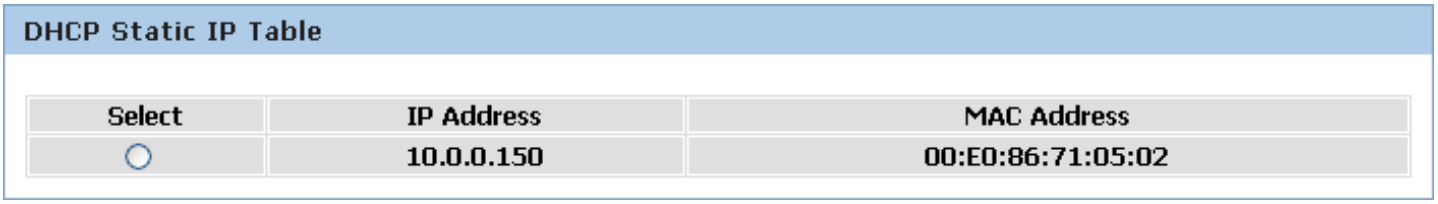
1. From the *Setup* menu, click on *Local Network*. The following page is displayed:



2. Enter the *IP Address*.
3. Enter the *Mac Address*.
4. Click *Add*.



5. The DHCP Static IP Configuration that you created has been added in the *DHCP Static IP Table*.



10 Wireless Network

This chapter assumes that you have already set up your Wireless PCs and installed a compatible Wireless card on your device. See *Configuring Wireless PCs*.

Wireless Basics

The *Wireless Network* page allows you to configure the Wireless features of your device. To access the *Wireless Basics* page:

From the *Wireless* menu, click on *Wireless Basics*. The following page is displayed:

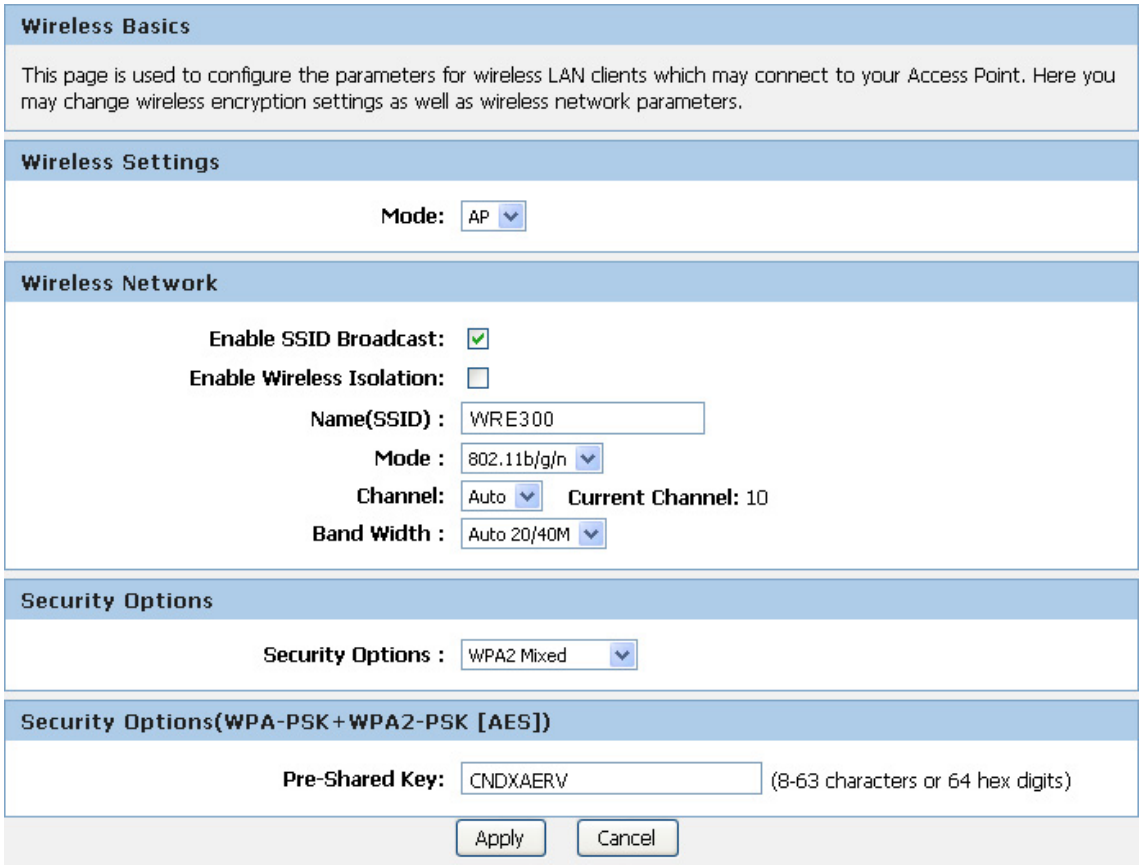


Figure 5: Wireless Network page

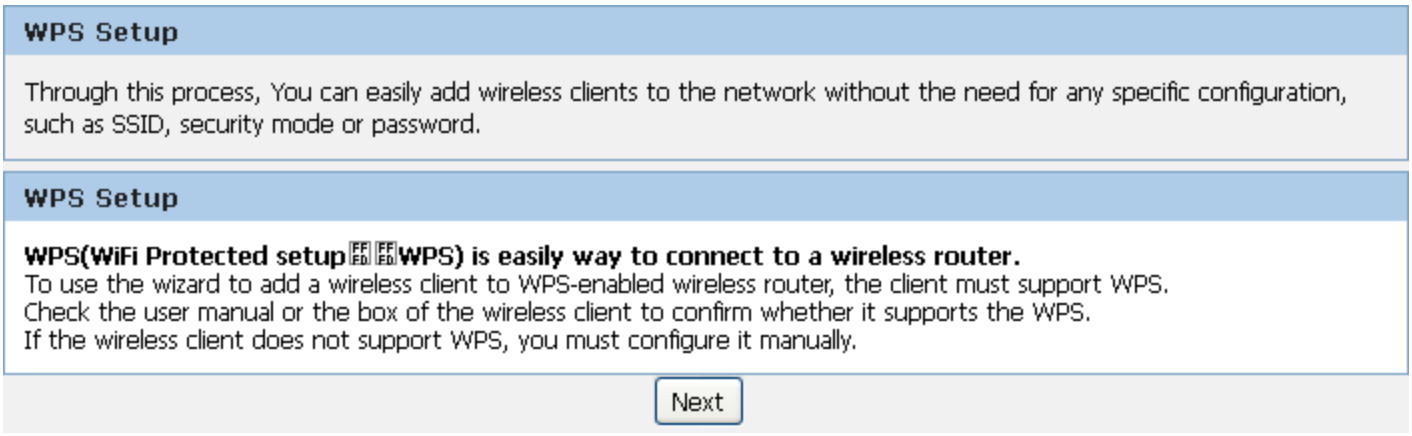
Field	Description
Enable SSID Broadcast	**Broadcast or Hide SSID to your Network.** **Default: Enabled**

Enable Wireless Isolation	**Isolate your Network.** **Default: Disabled**
SSID	**Specify the network name.** **Each Wireless LAN network uses a unique Network Name to identify the network. This name is called the Service Set Identifier (SSID). When you set up your wireless adapter, you specify the SSID. If you want to connect to an existing network, you must use the name for that network. If you are setting up your own network you can make up your own name and use it on each computer. The name can be up to 20 characters long and contain letters and numbers.**
Mode	**Specify the WLAN Mode to 802.11b mode, 802.11g mode, 802.11b/g mode, 802.11n mode, 802.11n/g mode or 802.11b/g/n mode**
Channel	**Choose a Channel from the pull-down menu.**
Band Width	**Choose a Band Width from the pull-down menu.**
Max Transmission Rate	**Select the Max Transmission Rate from the drop-down list**
Security Options	**Configure the Encryption to None, WEP, WPA-PSK[TKIP] , WPA2-PSK[AES] or WPA-PSK/WPA2-PSK AES**
Security Encryption(WEP)	**Authentication Type: Automatic or Shared Keys** **Encryption Strength: 64 bits or 128 bits**
Security Encryption(WEP) Key	**Select and configure Key 1, Key 2, Key 3 or Key 4**
Security Options(WPA-PSK)	**Enter the Pre-Shared Key**
Security Options(WPA2-PSK)	**Enter the Pre-Shared Key**
Security Options(WPA-PSK+WPA2-PSK)	**Enter the Pre-Shared Key**

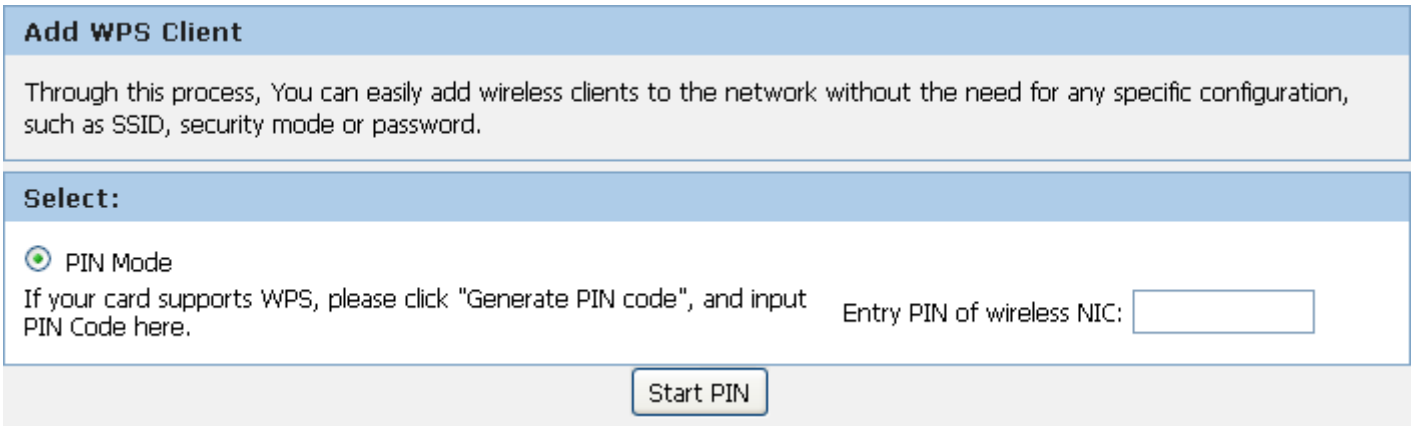
WPS Setup (For AP mode only)

Through this process, You can easily add wireless clients to the network without the need for any specific configuration, such as SSID, security mode or password.

From the *Wireless* menu, click on WPS. The following page is displayed:



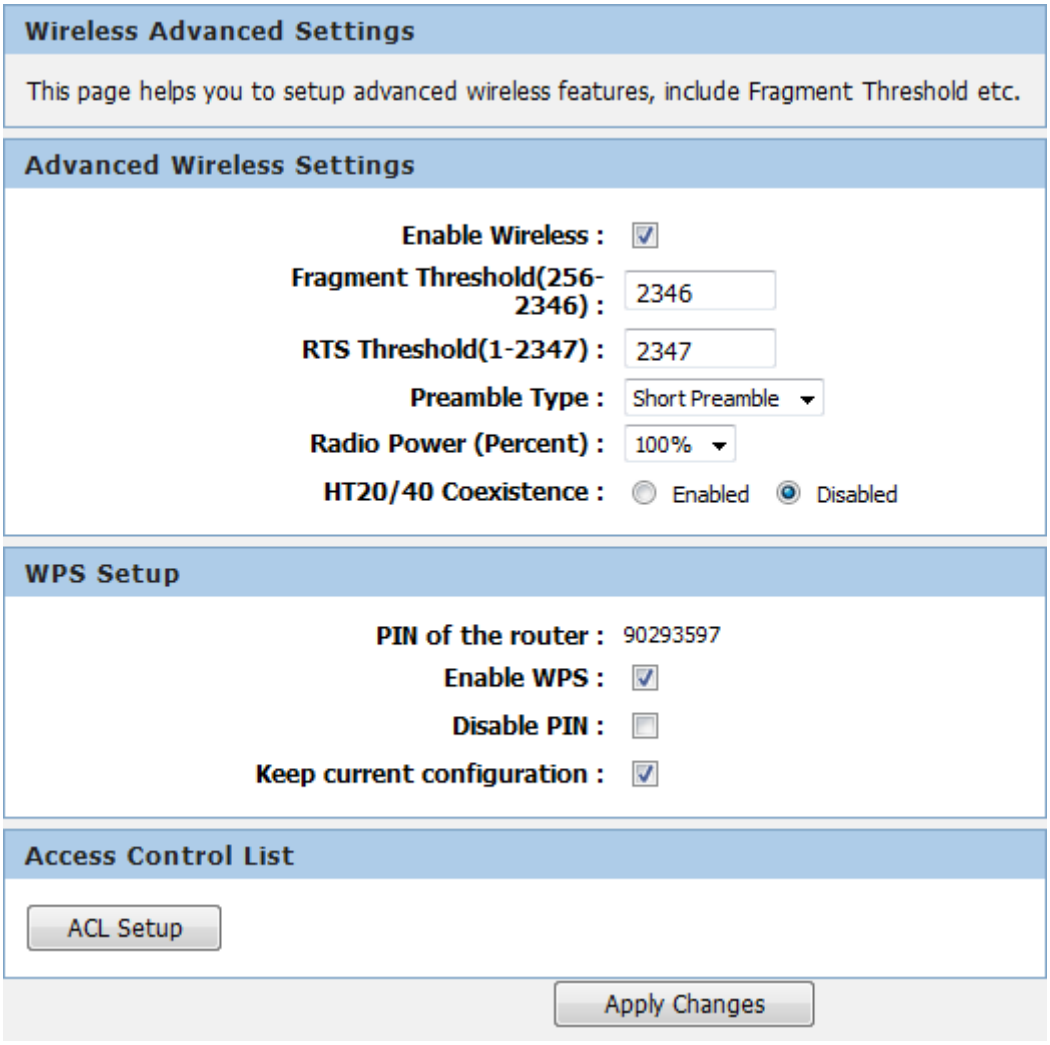
You can add wireless client by PIN mode. If you use PIN mode, you should input client PIN code. Meanwhile you should start client WPS process. You can find client PIN code on client manager.



Wireless Advanced Settings

This page helps you to setup advanced wireless features, include Fragment Threshold etc.

From the *Wireless* menu, click on *Wireless Advanced*. The following page is displayed:



Field	Description
Fragment Threshold	**When transmitting a packet over a network medium, sometimes the packet is broken into several segments, if the size of packet exceeds that allowed by the network medium.** **The Fragmentation Threshold defines the number of bytes used for the fragmentation boundary for directed messages.**
RTS Threshold	**RTS stands for "Request to Send". This parameter controls what size data packet the low level RF protocol issues to an RTS packet. The default is 2347.**
Preamble Type	**This is the length of the CRC (Cyclic Redundancy Check) block for communication between the router and wireless clients. High network traffic areas should select Short preamble type.**
Radio Power (Percent)	**TX Power measurement.**
HT20/40 Coexistence	**Disable or Enable 20/40MHz Coexist**
Enable WPS (For AP Mode only)	**Disable or Enable WPS**

Disable PIN (For AP Mode only)	**Disable or Enable PIN**
Keep current configuration (For AP Mode only)	**Disable or Enable current configuration**

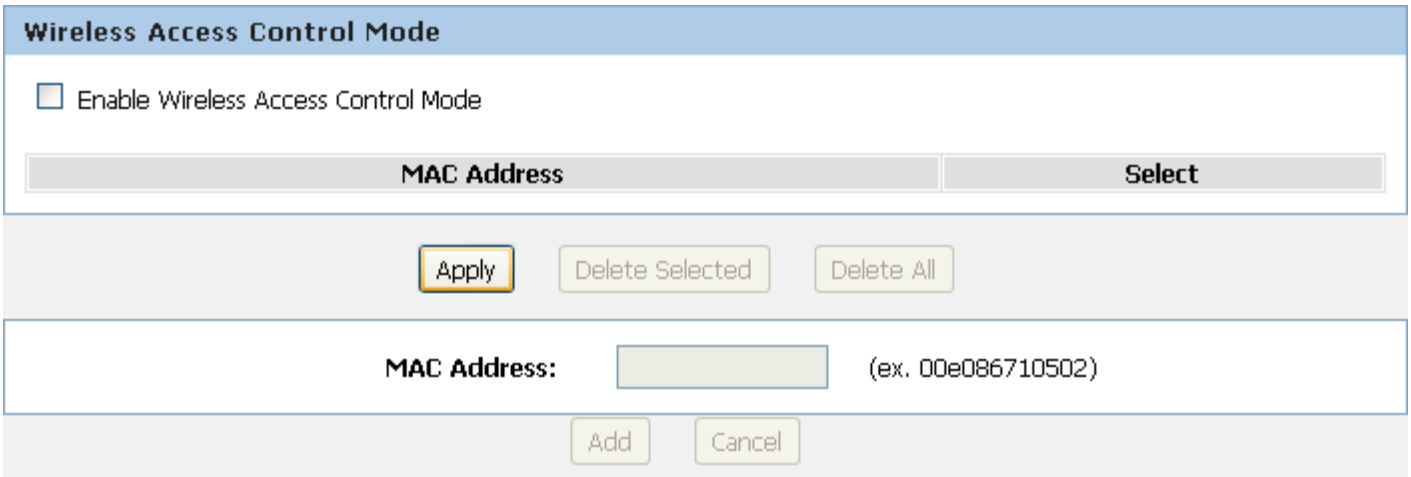
Wireless Access Control Mode

For security reason, using MAC ACL's (MAC Address Access List) creates another level of difficulty to hacking a network. A MAC ACL is created and distributed to AP so that only authorized NIC's can connect to the network. While MAC address spoofing is a proven means to hacking a network this can be used in conjunction with additional security measures to increase the level of complexity of the network security decreasing the chance of a breach.

MAC addresses can be add/delete/edit from the ACL list depending on the MAC Access Policy.

If you choose 'Allowed Listed', only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point. When 'Deny Listed' is selected, these wireless clients on the list will not be able to connect the Access Point. To access the *Wireless Network Access Control* page:

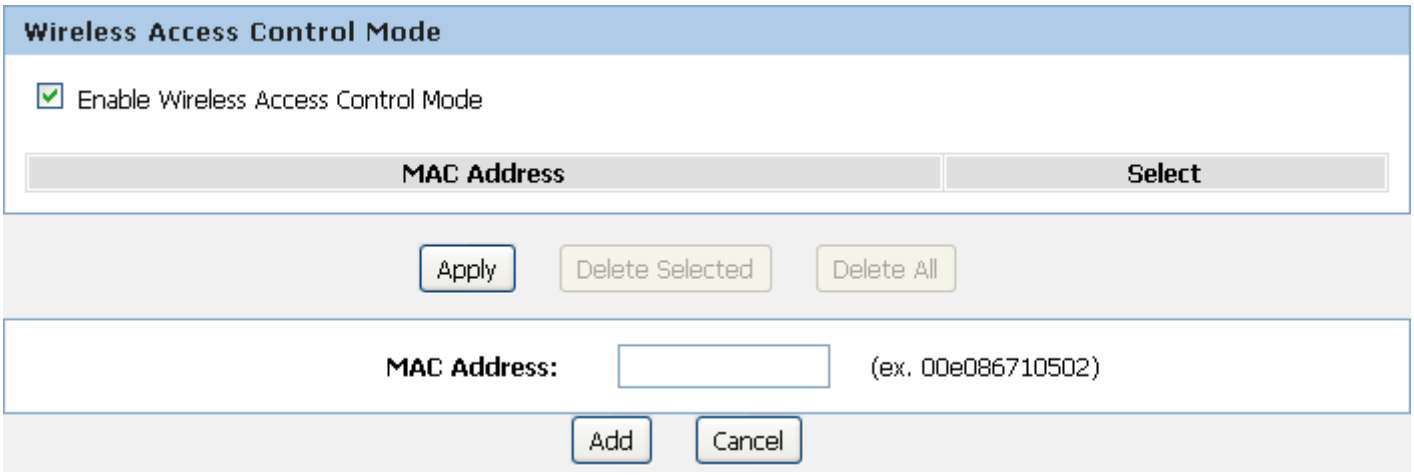
From the *Wireless* menu, click on *Wireless Advanced* and then click on *ACL Setup* button. The following page is displayed:



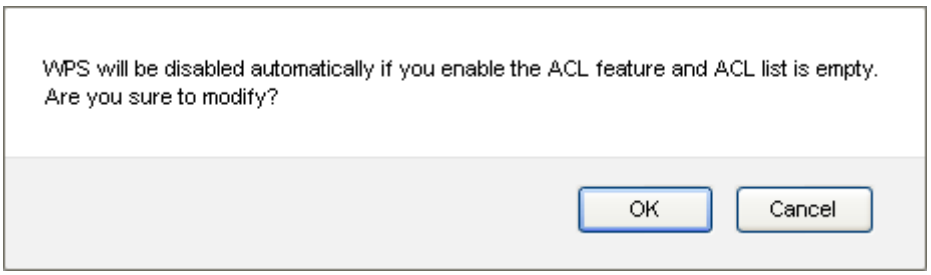
Allow Listed

If you Enable Wireless Access Control Mode, only those clients whose wireless MAC addresses are in the access control list will be able to connect to your Access Point.

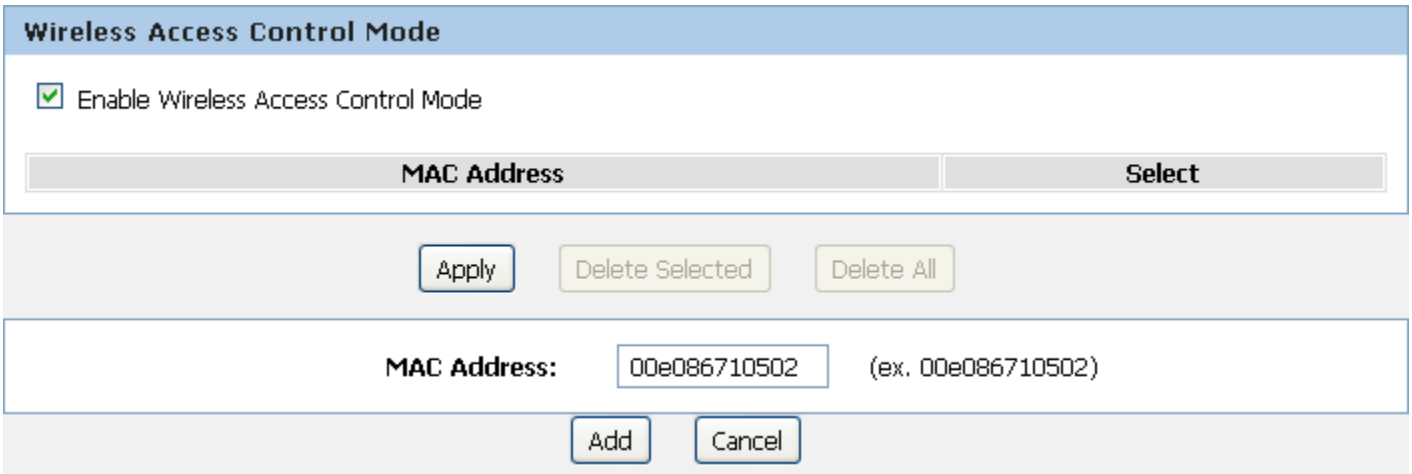
1. Enable Wireless Access Control Mode.
2. Click *Apply* button.



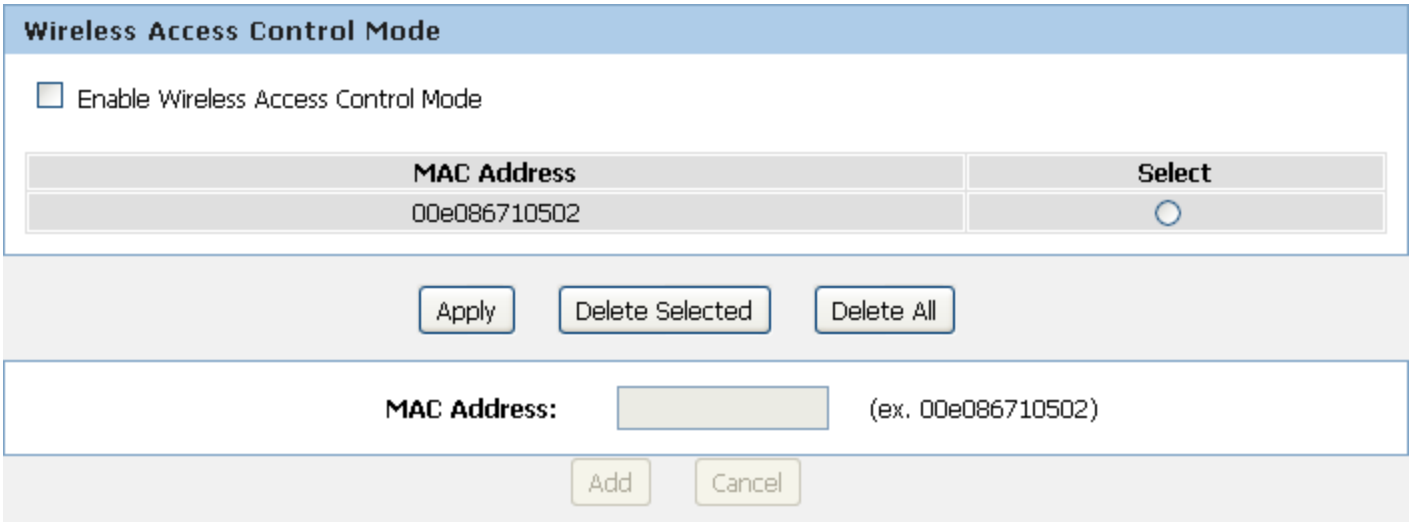
3. Click *OK* button.



4. Enter the *MAC Address*.
5. Click *Add* button.



6. The MAC Address that you created has been added in the *Access Control List*.

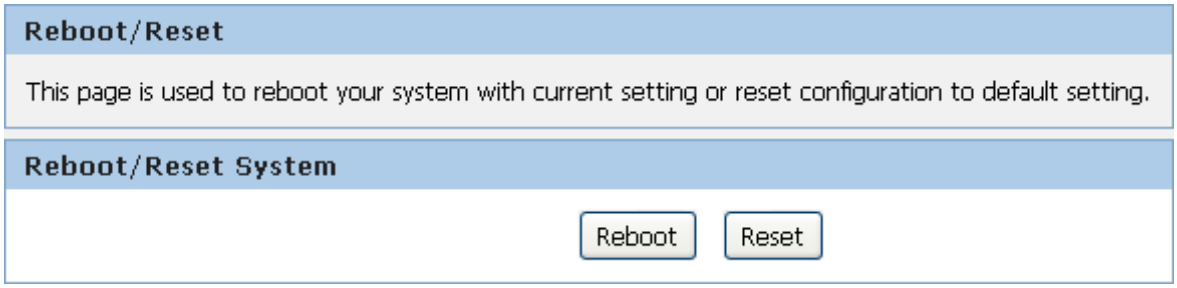

Wireless Access Control Mode
Enable Wireless Access Control Mode
MAC Address
Select
00e086710502
Apply
Delete Selected
Delete All
MAC Address:
(ex. 00e086710502)
Add
Cancel

11 Reboot/Reset

Restarts the device with current setting or default setting.

Reboot/Reset

1. From the *Maintenance -> Reboot* menu. The following page is displayed:



Fields on the first setting block	Description
Reboot	Restarts the router for the settings to take effect.
Reset	Restarts the router with factory default setting.

12 Firmware Upgrade

About firmware versions

Firmware is a software program. It is stored as read-only memory on your device.

Your device can check whether there are later firmware versions available. If there is a later version, you can download it via the Internet and install it on your device.

Note

If there is a firmware update available you are strongly advised to install it on your device to ensure that you take full advantage of any new feature developments.

Manually updating firmware

You can manually download the latest firmware version from provider's website to your PC's file directory.

Once you have downloaded the latest firmware version to your PC, you can manually select and install it as follows:

1. From the *Maintenance -> Firmware Upgrade* menu. The following page is displayed:
2. Click on the *Browse…* button.
3. Once you have selected the file to be installed, click *Open*. The file's directory path is displayed in the *New Firmware Image:* text box.
4. Click *Automatically reset default after firmware upgraded*.
5. Click *Upload*.

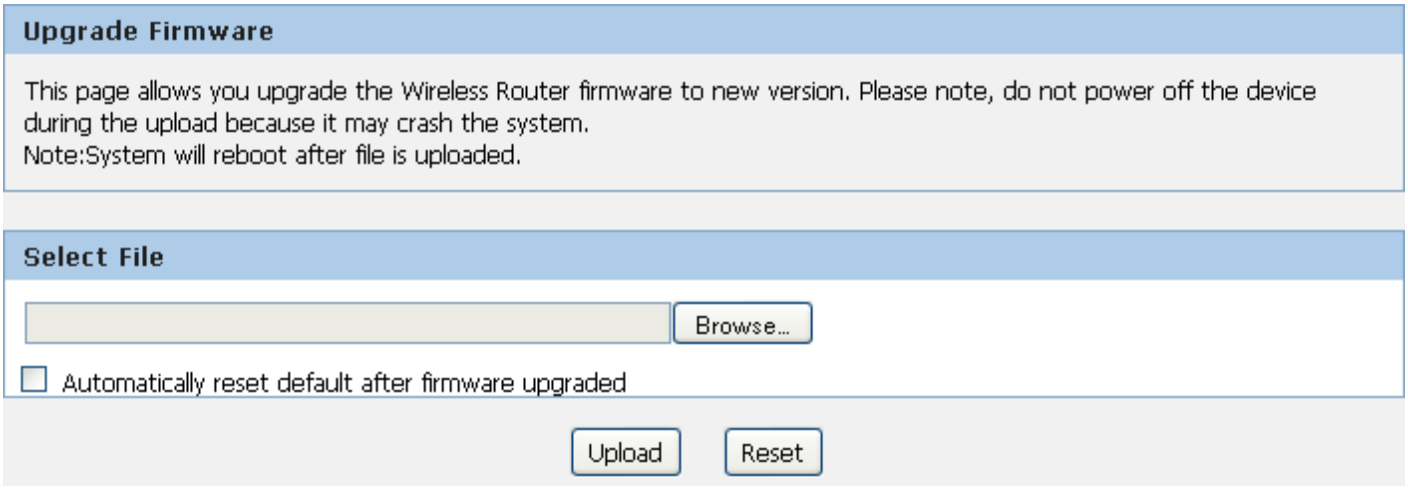
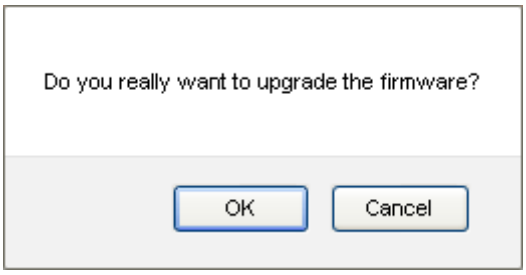


Figure 6: Manual Update Installation section

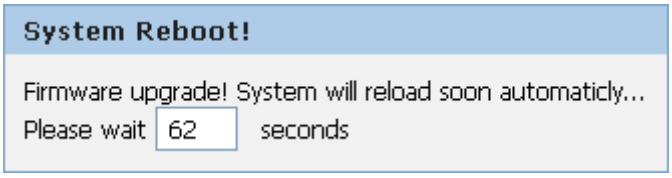
(Note that if you are using certain browsers (such as *Opera 7*) the *Browse* button is labeled *Choose*.)

Use the *Choose file* box to navigate to the relevant directory where the firmware version is saved.

6. Click *OK*.



7. The device checks that the selected file contains an updated version of firmware. A status screen pops up, please wait for a while…….
8. The device checks that the selected file contains an updated version of firmware. A status screen pops up, please wait for a while…….



13 Backup/Restore Settings

This page allows you save current settings to a file or reload the settings from the file which was saved previously.

Besides, you could reset the current configuration to factory default.

If you do make changes to the default configuration but then wish to revert back to the original factory configuration, you can do so by resetting the device to factory defaults.

Save Settings to File

It allows you save current settings to a file.

1. From the *Maintenance -> Backup/Restore* menu. The following page is displayed:

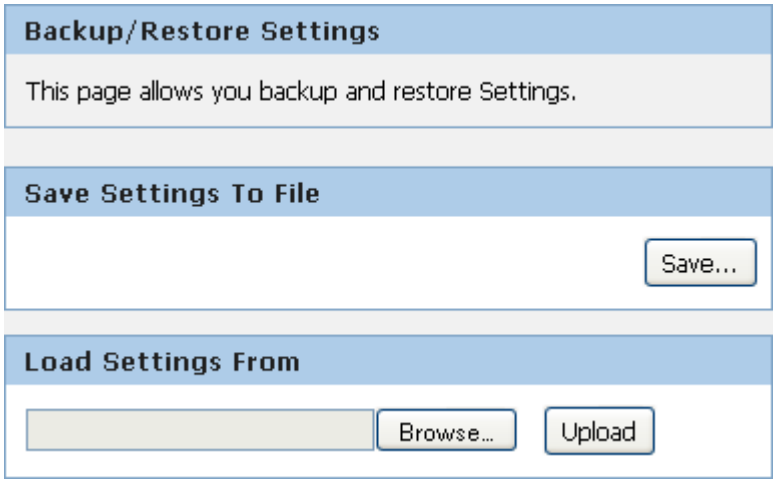
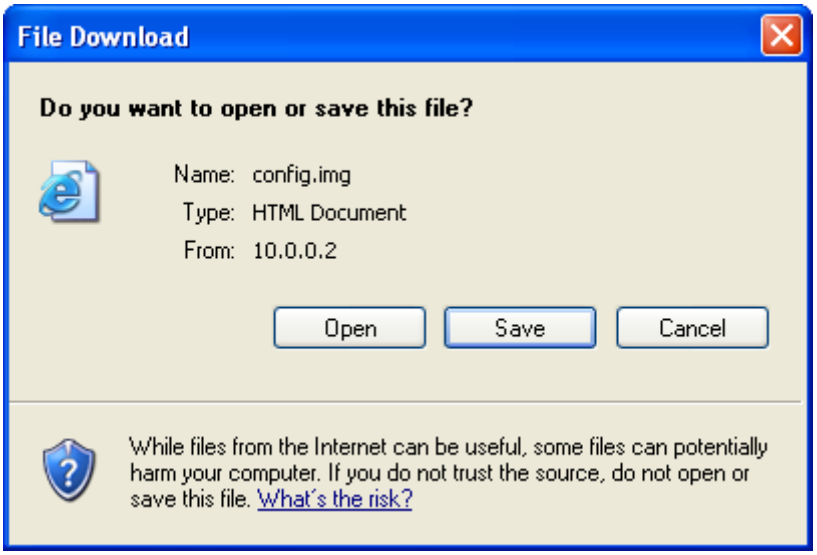


Figure 7: Reset to Defaults page

Option	Description
Save Settings to File	**Save the Settings to a File**
Load Settings from File	**Load Settings from a File**

2. Click on *Save….*

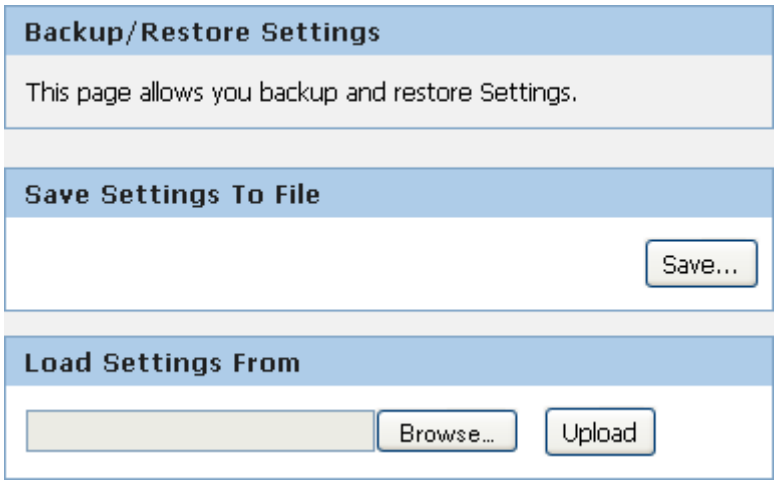
3. If you are happy with this, click *Save* and then browse to where the file to be saved. Or click *Cancel* to cancel it.



Load Settings from File

It allows you to reload the settings from the file which was saved previously.

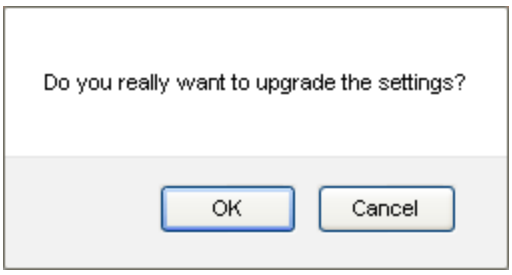
4. From the *Maintenance -> Backup/Restore* menu. The following page is displayed:



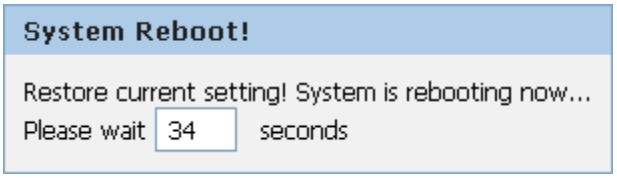
5. Click on *Browse*….to browse to where the config.img is.

6. If you are happy with this, click *Upload* to start to load settings from file.

7. If you are happy with this, click *Upload* to start to load settings from file.



8. please wait for a while…….



14 Password

You can restrict access to your device's web pages using password protection. With password protection enabled, users must enter a username and password before gaining access to the web pages.

By default, password protection is enabled on your device, and the username and password set are as follows:

Username: **admin**

Password: **administrator**

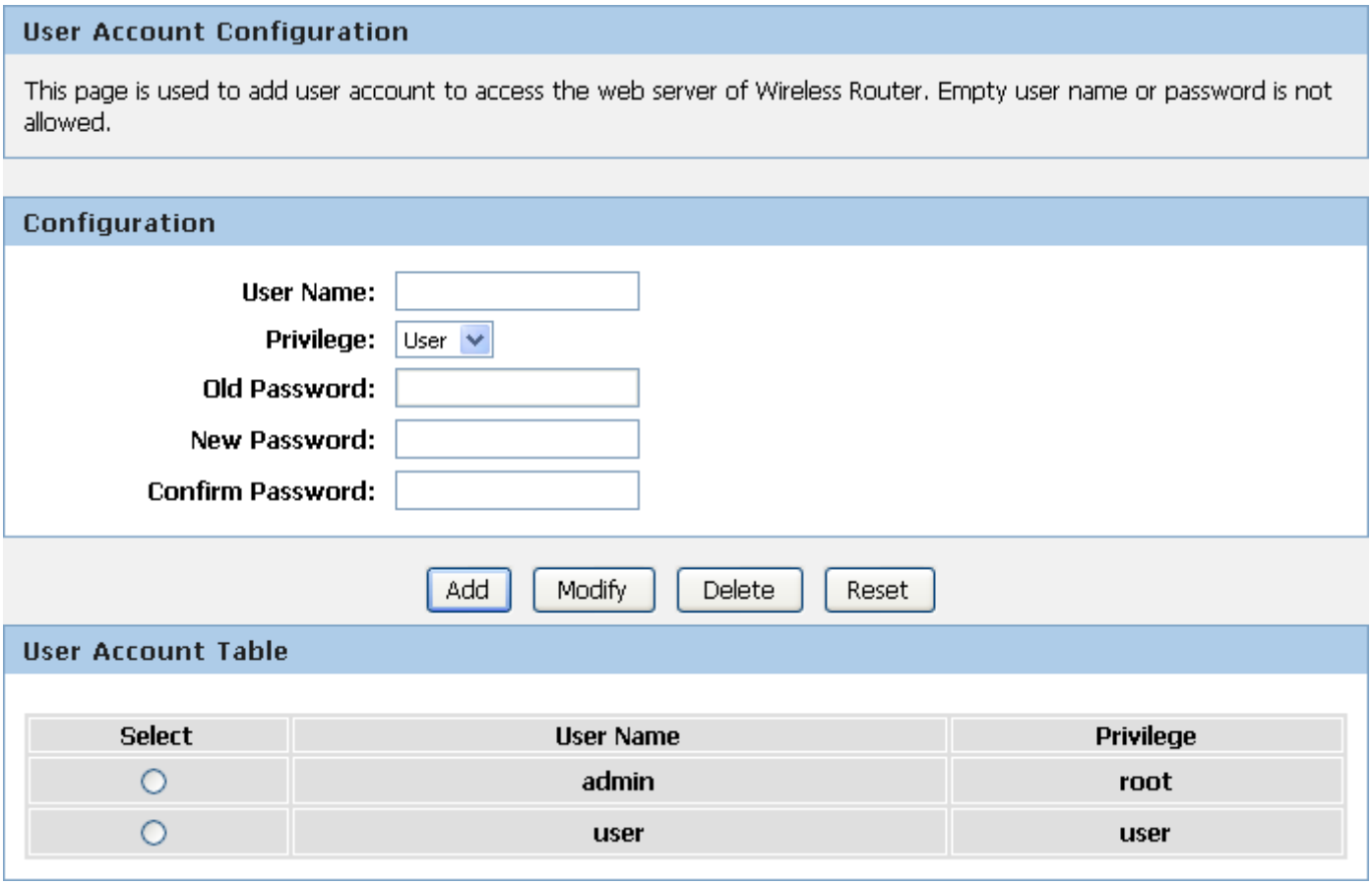
Setting your username and password

Note

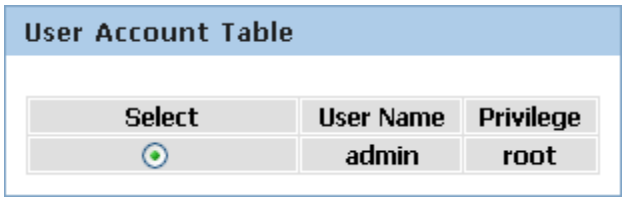
Non-authorized users may try to access your system by guessing your username and password. We recommend that you change the default username and password to your own unique settings.

To change the default password:

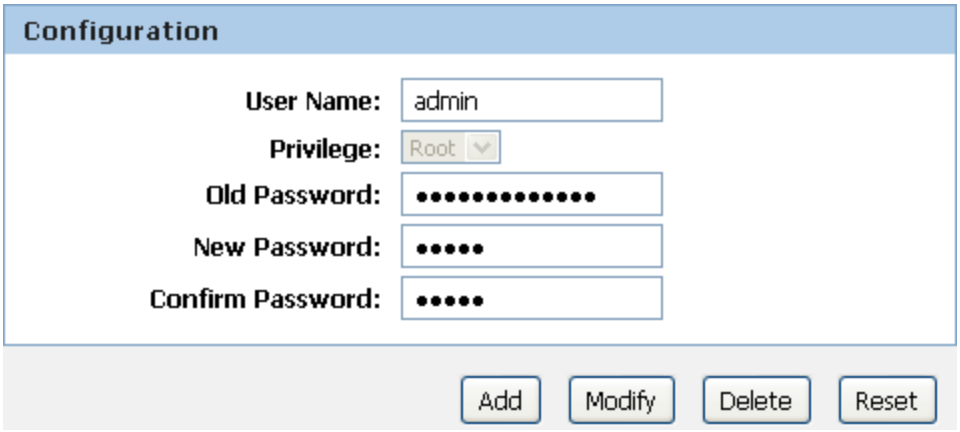
1. From the *Maintenance -> Password* menu. The following page is displayed:



2. This page displays the current username and password settings. Change your own unique password in the relevant boxes. They can be any combination of letters or numbers with a maximum of 30 characters. The default setting uses ***admin*** for the username and **administrator** for password.
3. If you are happy with these settings, click ***Modify***. You will see following page that the new user has been displayed on the Currently Defined Users. You need to login to the web pages using your new username and new password.
4. Click on the ratio of admin from User Account Table.



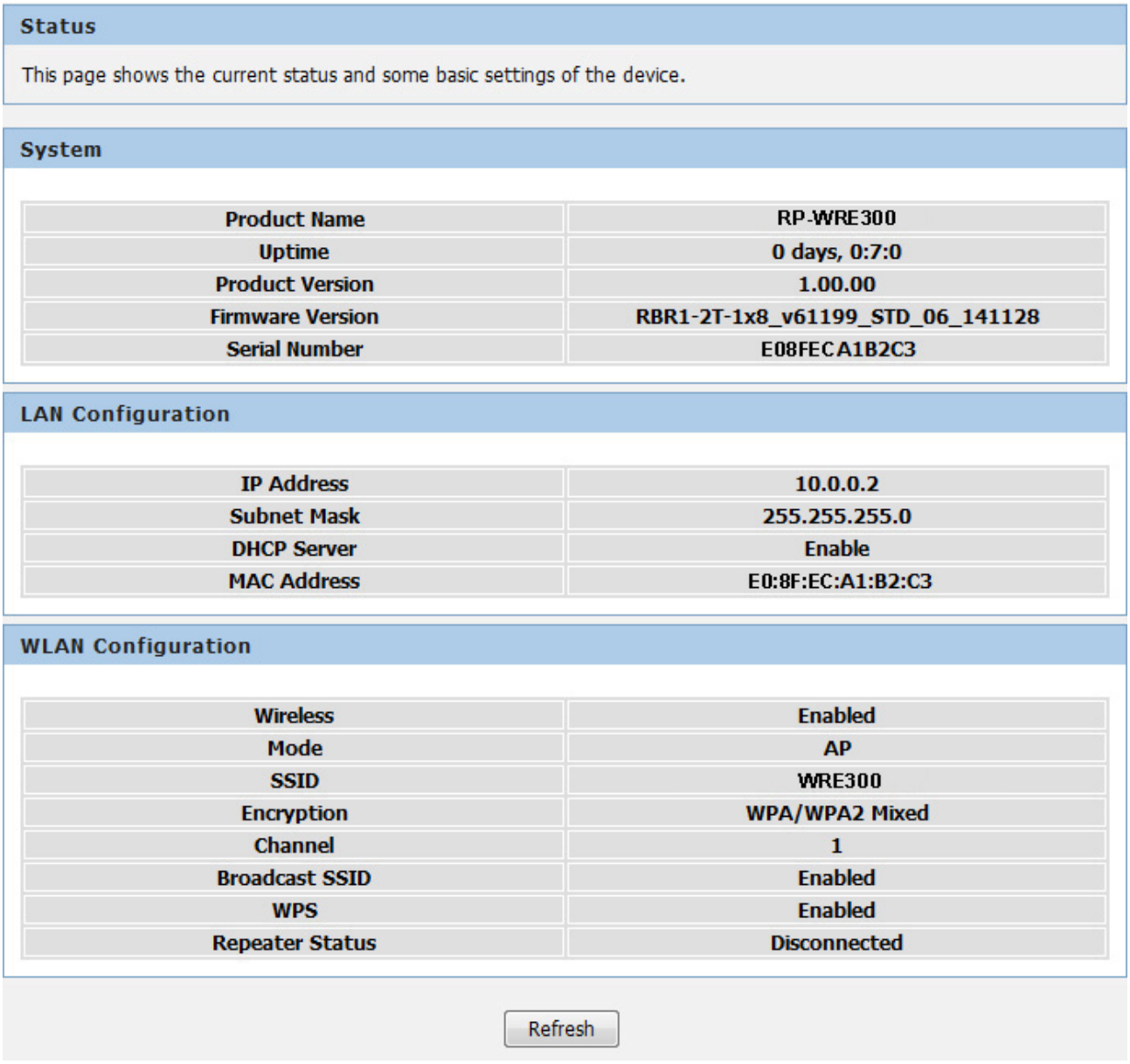
5. Enter the Old Password.
6. Enter the New Password.
7. Enter the Confirm Password.
8. Click on *Modify*.



15 Status

This page displays the current information for the device. It will display the LAN, WAN, and system firmware information. This page will display different information, according to WAN setting (Static IP, DHCP, or PPPoE).

1. From the *Status -> Device Info* menu. The following page is displayed:



Status

This page shows the current status and some basic settings of the device.

System

Product Name	RP-WRE300
Uptime	0 days, 0:7:0
Product Version	1.00.00
Firmware Version	RBR1-2T-1x8_v61199_STD_06_141128
Serial Number	E08FECA1B2C3

LAN Configuration

IP Address	10.0.0.2
Subnet Mask	255.255.255.0
DHCP Server	Enable
MAC Address	E0:8F:EC:A1:B2:C3

WLAN Configuration

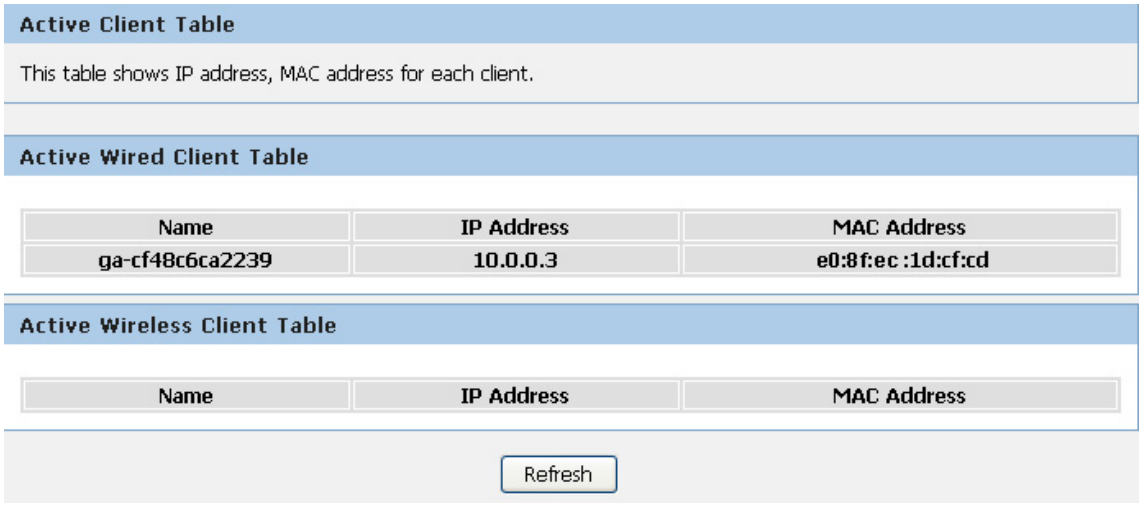
Wireless	Enabled
Mode	AP
SSID	WRE300
Encryption	WPA/WPA2 Mixed
Channel	1
Broadcast SSID	Enabled
WPS	Enabled
Repeater Status	Disconnected

Refresh

16 Active Client Table

This page shows the computers, identified by the name and MAC address that have acquired IP addresses by the DHCP server with the time that the lease for the IP address is up

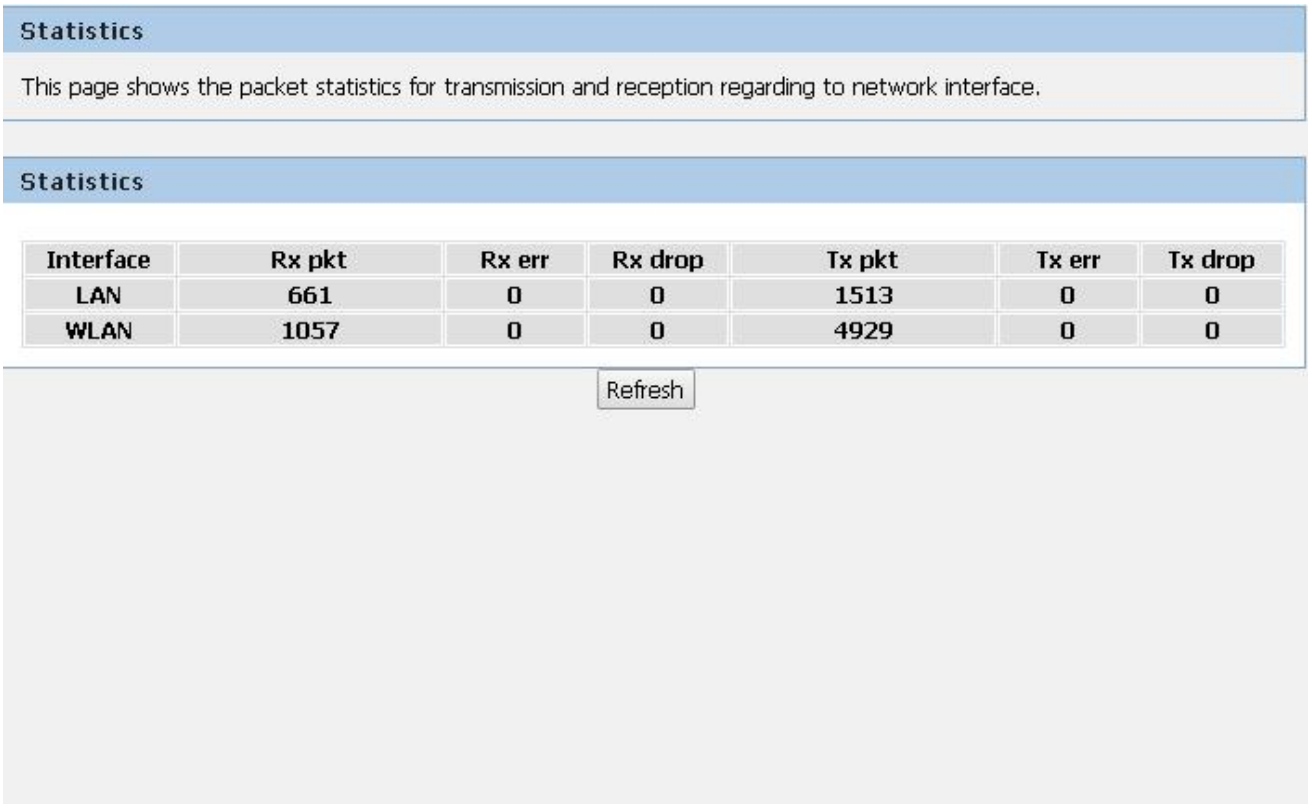
1. From the *Status -> Active Client Table* menu. The following page is displayed:



17 Statistics

This page shows the packet statistics for transmission and reception regarding to network interface.

1. From the *Status -> Statistics* menu. The following page is displayed:



A Configuring your Computers

This appendix provides instructions for configuring the Internet settings on your computers to work with the Wireless Gateway.

Configuring Ethernet PCs

Before you begin

By default, the Wireless Gateway automatically assigns the required Internet settings to your PCs. You need to configure the PCs to accept this information when it is assigned.

Note

In some cases, you may want to assign Internet information manually to some or all of your computers rather than allow the Wireless Gateway to do so. See *Assigning static Internet information to your PCs* for instructions.

- If you have connected your LAN PCs via Ethernet to the Wireless Gateway, follow the instructions that correspond to the operating system installed on your PC:
  - Windows® XP PCs
  - Windows 2000 PCs
  - Windows Me PCs
  - Windows 95, 98 PCs
  - Windows NT 4.0 workstations

Windows® XP PCs

1. In the Windows task bar, click the *Start* button, and then click *Control Panel*.
2. Double-click the Network Connections icon.
3. In the *LAN or High-Speed Internet* window, right-click on the icon corresponding to your network interface card (NIC) and select *Properties*. (Often, this icon is labeled *Local Area Connection*).

   The *Local Area Connection* dialog box is displayed with a list of currently installed network items.
4. Ensure that the check box to the left of the item labeled *Internet Protocol TCP/IP* is checked and click *Properties*.
5. In the *Internet Protocol (TCP/IP) Properties* dialog box, click the radio button labeled *Obtain an IP address automatically*. Also click the radio button labeled *Obtain DNS server address automatically*.
6. Click *OK* twice to confirm your changes, and then close the Control Panel.

Windows 2000 PCs

First, check for the IP protocol and, if necessary, install it:

1. In the Windows task bar, click the *Start* button, point to *Settings*, and then click *Control Panel*.
2. Double-click the Network and Dial-up Connections icon.

3. In the *Network and Dial-up Connections* window, right-click the Local Area Connection icon, and then select *Properties*.

   The *Local Area Connection Properties* dialog box is displayed with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled. Skip to step 10.

4. If Internet Protocol (TCP/IP) does not display as an installed component, click *Install…*
5. In the *Select Network Component* Type dialog box, select *Protocol*, and then click *Add…*
6. Select *Internet Protocol (TCP/IP)* in the Network Protocols list, and then click *OK*.

   You may be prompted to install files from your Windows 2000 installation CD or other media. Follow the instructions to install the files.

7. If prompted, click *OK* to restart your computer with the new settings.

Next, configure the PCs to accept IP information assigned by the Wireless Gateway:

8. In the *Control Panel*, double-click the Network and Dial-up Connections icon.
9. In the *Network and Dial-up Connections* window, right-click the Local Area Connection icon, and then select *Properties*.
10. In the Local Area Connection Properties dialog box, select *Internet Protocol (TCP/IP),* and then click *Properties*.
11. In the *Internet Protocol (TCP/IP) Properties* dialog box, click the radio button labeled *Obtain an IP address automatically.* Also click the radio button labeled *Obtain DNS server address automatically*.
12. Click *OK* twice to confirm and save your changes, and then close the Control Panel.

Windows Me PCs

1. In the Windows task bar, click the *Start* button, point to *Settings*, and then click *Control Panel*.
2. Double-click the Network and Dial-up Connections icon.
3. In the *Network and Dial-up Connections* window, right-click the Network icon, and then select *Properties*.

   The *Network Properties* dialog box displays with a list of currently installed network components. If the list includes Internet Protocol (TCP/IP), then the protocol has already been enabled. Skip to step 11.
4. If Internet Protocol (TCP/IP) does not display as an installed component, click *Add…*
5. In the *Select Network Component Type* dialog box, select *Protocol*, and then click *Add…*
6. Select *Microsoft* in the Manufacturers box.
7. Select *Internet Protocol (TCP/IP)* in the Network Protocols list, and then click *OK*.

   You may be prompted to install files from your Windows Me installation CD or other media. Follow the instructions to install the files.
8. If prompted, click *OK* to restart your computer with the new settings.

Next, configure the PCs to accept IP information assigned by the Wireless Gateway:

9. In the *Control Panel*, double-click the Network and Dial-up Connections icon.
10. In *Network and Dial-up Connections window*, right-click the Network icon, and then select *Properties*.
11. In the *Network Properties* dialog box, select *TCP/IP*, and then click *Properties*.
12. In the TCP/IP Settings dialog box, click the radio button labeled **Server** *assigned IP address*. Also click the radio button labeled *Server assigned name server address*.
13. Click *OK* twice to confirm and save your changes, and then close the *Control Panel*.

Windows 95, 98 PCs

First, check for the IP protocol and, if necessary, install it:

1. In the Windows task bar, click the *Start* button, point to *Settings*, and then click *Control Panel*.
2. Double-click the Network icon.

   The *Network* dialog box displays with a list of currently installed network components. If the list includes TCP/IP, and then the protocol has already been enabled. Skip to step 9.
3. If TCP/IP does not display as an installed component, click *Add…*

   The *Select Network Component Type* dialog box displays.
4. Select *Protocol*, and then click *Add…*

   The Select Network Protocol dialog box displays.

5. Click on *Microsoft* in the Manufacturers list box, and then click *TCP/IP* in the Network Protocols list box.
6. Click *OK* to return to the Network dialog box, and then click *OK* again.

   You may be prompted to install files from your Windows 95/98 installation CD. Follow the instructions to install the files.
7. Click *OK* to restart the PC and complete the TCP/IP installation.

Next, configure the PCs to accept IP information assigned by the Wireless Gateway:

8. Open the Control Panel window, and then click the Network icon.
9. Select the network component labeled TCP/IP, and then click *Properties*.

   If you have multiple TCP/IP listings, select the listing associated with your network card or adapter.
10. In the TCP/IP Properties dialog box, click the IP Address tab.
11. Click the radio button labeled *Obtain an IP address automatically*.
12. Click the DNS Configuration tab, and then click the radio button labeled *Obtain an IP address automatically*.
13. Click *OK* twice to confirm and save your changes.

    You will be prompted to restart Windows.
14. Click *Yes*.

Windows NT 4.0 workstations

First, check for the IP protocol and, if necessary, install it:

1. In the Windows NT task bar, click the *Start* button, point to *Settings*, and then click *Control Panel*.
2. In the Control Panel window, double click the Network icon.
3. In the *Network dialog* box, click the *Protocols* tab.

   The *Protocols* tab displays a list of currently installed network protocols. If the list includes TCP/IP, then the protocol has already been enabled. Skip to step 9.
4. If TCP/IP does not display as an installed component, click *Add…*
5. In the *Select Network Protocol* dialog box, select *TCP/IP*, and then click *OK*.

   You may be prompted to install files from your Windows NT installation CD or other media. Follow the instructions to install the files.

   After all files are installed, a window displays to inform you that a TCP/IP service called DHCP can be set up to dynamically assign IP information.
6. Click *Yes* to continue, and then click *OK* if prompted to restart your computer.

Next, configure the PCs to accept IP information assigned by the Wireless Gateway:

7. Open the Control Panel window, and then double-click the Network icon.
8. In the *Network* dialog box, click the *Protocols* tab.
9. In the *Protocols* tab, select *TCP/IP*, and then click *Properties*.
10. In the *Microsoft TCP/IP Properties* dialog box, click the radio button labeled *Obtain an IP address from a DHCP server.*
11. Click *OK* twice to confirm and save your changes, and then close the Control Panel.

Assigning static Internet information to your PCs

If you are a typical user, you will not need to assign static Internet information to your LAN PCs because your ISP automatically assigns this information for you.

In some cases however, you may want to assign Internet information to some or all of your PCs directly (often called "statically"), rather than allowing the Wireless Gateway to assign it. This option may be desirable (but not required) if:

- You have obtained one or more public IP addresses that you want to always associate with specific computers (for example, if you are using a computer as a public web server).
- You maintain different subnets on your LAN (subnets are described in Appendix B).

Before you begin, you must have the following information available:

- The IP address and subnet mask of each PC
- The IP address of the default gateway for your LAN. In most cases, this is the address assigned to the LAN port on the Wireless Gateway. By default, the LAN port is assigned the IP address *10.0.0.2*. (You can change this number or another number can be assigned by your ISP. See *Addressing* for more information.)
- The IP address of your ISP's Domain Name System (DNS) server.

On each PC to which you want to assign static information, follow the instructions relating only to checking for and/or installing the IP protocol. Once it is installed, continue to follow the instructions for displaying each of the Internet Protocol (TCP/IP) properties. Instead of enabling dynamic assignment of the IP addresses for the computer, DNS server and default gateway, click the radio buttons that enable you to enter the information manually.

Note

Your PCs must have IP addresses that place them in the same subnet as the Wireless Gateway's LAN port. If you manually assign IP information to all your LAN PCs, you can follow the instructions in Addressing to change the LAN port IP address accordingly.

B IP Addresses, Network Masks, and Subnets

IP Addresses

Note

This section refers only to IP addresses for IPv4 (version 4 of the Internet Protocol). IPv6 addresses are not covered.

This section assumes basic knowledge of binary numbers, bits, and bytes.

IP addresses, the Internet's version of telephone numbers, are used to identify individual nodes (computers or devices) on the Internet. Every IP address contains four numbers, each from 0 to 255 and separated by dots (periods), e.g. 20.56.0.211. These numbers are called, from left to right, field1, field2, field3, and field4.

This style of writing IP addresses as decimal numbers separated by dots is called *dotted decimal notation*. The IP address 20.56.0.211 is read "twenty dot fifty-six dot zero dot two-eleven."

Structure of an IP address

IP addresses have a hierarchical design similar to that of telephone numbers. For example, a 7-digit telephone number starts with a 3-digit prefix that identifies a group of thousands of telephone lines, and ends with four digits that identify one specific line in that group.

Similarly, IP addresses contain two kinds of information:

- *Network ID*
  Identifies a particular network within the Internet or intranet
- *Host ID*
  Identifies a particular computer or device on the network

The first part of every IP address contains the network ID, and the rest of the address contains the host ID. The length of the network ID depends on the network's *class* (see following section). The table below shows the structure of an IP address.

	Field1	Field2	Field3	Field4
Class A	Network ID	Host ID		
Class B	Network ID		Host ID	
Class C	Network ID			Host ID

Here are some examples of valid IP addresses:

Class A: 10.30.6.125 (network = 10, host = 30.6.125)
Class B: 129.88.16.49 (network = 129.88, host = 16.49)
Class C: 192.60.201.11 (network = 192.60.201, host = 11)

Network classes

The three commonly used network classes are A, B, and C. (There is also a class D but it has a special use beyond the

scope of this discussion.) These classes have different uses and characteristics.

Class A networks are the Internet's largest networks, each with room for over 16 million hosts. Up to 126 of these huge networks can exist, for a total of over 2 billion hosts. Because of their huge size, these networks are used for WANs and by organizations at the infrastructure level of the Internet, such as your ISP.

Class B networks are smaller but still quite large, each able to hold over 65,000 hosts. There can be up to 16,384 class B networks in existence. A class B network might be appropriate for a large organization such as a business or government agency.

Class C networks are the smallest, only able to hold 254 hosts at most, but the total possible number of class C networks exceeds 2 million (2,097,152 to be exact). LANs connected to the Internet are usually class C networks.

Some important notes regarding IP addresses:

- The class can be determined easily from field1:
  field1 = 1-126: Class A
  field1 = 128-191: Class B
  field1 = 192-223: Class C
  (field1 values not shown are reserved for special uses)
- A host ID can have any value except all fields set to 0 or all fields set to 255, as those values are reserved for special uses.

Subnet masks

Definition
mask

A mask *looks like a regular IP address, but contains a pattern of bits that tells what parts of an IP address are the network ID and what parts are the host ID: bits set to 1 mean "this bit is part of the network ID" and bits set to 0 mean "this bit is part of the host ID."*

Subnet masks are used to define *subnets* (what you get after dividing a network into smaller pieces). A subnet's network ID is created by "borrowing" one or more bits from the host ID portion of the address. The subnet mask identifies these host ID bits.

For example, consider a class C network 192.168.1. To split this into two subnets, you would use the subnet mask:

255.255.255.128

It's easier to see what's happening if we write this in binary:

11111111. 11111111. 11111111.10000000

As with any class C address, all of the bits in field1 through field3 are part of the network ID, but note how the mask specifies that the first bit in field4 is also included. Since this extra bit has only two values (0 and 1), this means there are two subnets. Each subnet uses the remaining 7 bits in field4 for its host IDs, which range from 1 to 126 hosts (instead of the usual 0 to 255 for a class C address).

Similarly, to split a class C network into four subnets, the mask is:

255.255.255.192 or 11111111. 11111111. 11111111.11000000

The two extra bits in field4 can have four values (00, 01, 10, 11), so there are four subnets. Each subnet uses the remaining six bits in field4 for its host IDs, ranging from 1 to 62.

Note

Sometimes a subnet mask does not specify any additional network ID bits, and thus no subnets. Such a mask is called a default subnet mask*. These masks are:*

Class A: 255.0.0.0
Class B: 255.255.0.0
Class C: 255.255.255.0

These are called default *because they are used when a network is initially configured, at which time it has no subnets.*

C UPnP Control Point Software on Windows ME/XP

This appendix provides instructions for configuring the UPnP on your computers to work with the Wireless Gateway.

UPnP is an architecture for pervasive peer-to-peer network connectivity of intelligent appliances, Wireless devices, and PCs of all form factors. It is designed to bring easy-to-use, flexible, standards-based connectivity to ad-hoc or unmanaged networks whether in the home, in a small business, public spaces, or attached to the Internet. UPnP is a distributed, open networking architecture that leverages TCP/IP and the Web technologies to enable seamless proximity networking in addition to control and data transfer among networked devices in the home, office, and public spaces.

UPnP is more than just a simple extension of the plug and play peripheral model. It is designed to support zero-configuration, "invisible" networking, and automatic discovery for a breadth of device categories from a wide range of vendors. This means a device can dynamically join a network, obtain an IP address, convey its capabilities, and learn about the presence and capabilities of other devices. DHCP and DNS servers are optional and are used only if available on the network. Finally, a device can leave a network smoothly and automatically without leaving any unwanted state behind.

UPnP Control Point Software on Windows ME

To install the control point software on Windows ME:

1. In the Control Panel, select "Add/Remove Programs".

2. In the "Add/Remove Programs Properties" dialog box, select the "Windows Setup" tab. In the "Components" list, double click on the "Communications" entry.

3. In the "Communications" dialog box, scroll down the "Components" list to display the UPnP entry. Select the entry, click "OK".

4. Click "OK" to finish the "Add/Remove Programs" dialog.

5. Reboot your system.

Once you have installed the UPnP software and you have rebooted (and your network includes the IGD system), you should be able to see the IGD controlled device on your network.

UPnP Control Point Software on Windows XP with Firewall

On Windows XP versions earlier than SP2, Firewall support is provided by the Windows XP Internet Connection Firewall. You cannot use the Windows XP Internet Connection Firewall support on a system that you intend to use as a UPnP control point. If this feature is enabled, although the control point system may display controlled devices in the list of network devices, the control point system cannot participate in UPnP communication. (This restriction also applies to controlled devices running on Windows XP systems earlier than SP2.)

On Windows XP SP2 and later, Firewall support is provided by Windows Firewall. Unlike earlier versions, Windows XP SP2 can be used on a system that you intend to use as a UPnP control point.

To turn off the Firewall capability on any version of Windows XP, follow the steps below:

1. In the Control Panel, select "Network and Internet Connections".

2. In the "Network and Internet Connections" dialog box, select "Network Connections".

3. In the "Network Connections" dialog box, right-click on the local area connection entry for your network; this will display a menu. Select the "Properties" menu entry.

4. In the "Local Area Connection Properties" dialog box, select the "Advanced" tab. Disable the Internet Connection Firewall by de-selecting the entry with the following label:

"Protect my computer and network by limiting or preventing access to the computer from the Internet".

5. Click "OK".

SSDP requirements

You must have SSDP Discovery Service enabled on your Windows XP system to use the UPnP Control point software.

SSDP Discovery Service is enabled on a default installation of Windows XP. To check if it is enabled on your system, look in Control Panel > Administrative Tools > Services).

Installation procedure

To install the Control point software on Windows XP, follow the steps below:

1. In the Control Panel, select "Add/Remove Programs".

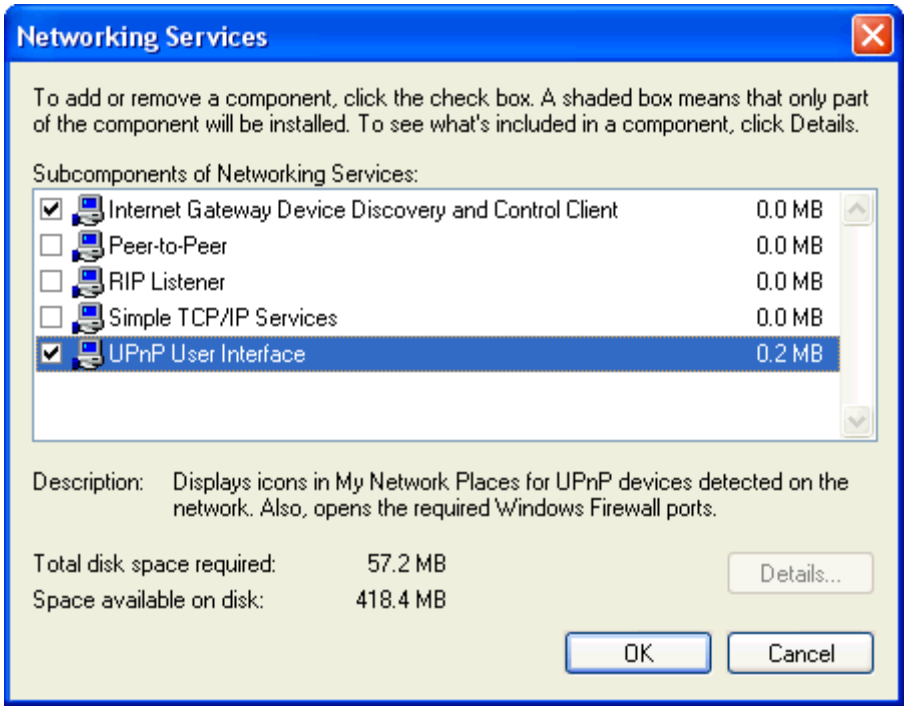
2. In the "Add or Remove Programs" dialog box, click the "Add / Remove Windows Components" button.

3. In the "Windows Component Wizard" dialog box, scroll down the list to display the "Networking Services" entry. Highlight (select) the entry, and click on the "Details" button.

4. The "Networking Services" window is displayed.

The subcomponents shown in the Networking Services window will be different depending on if you are using Windows XP, Windows XP (SP1), or Windows XP (SP2).

If you are using Windows XP SP2, the Networking Services window will display the following list of sub-components:



5. Select the following entries from the "Networking Services" window and then click "OK":

If you are using **Windows XP**, select:

• "Universal Plug and Play".

If you are using **Windows XP SP1**, select:

• "Internet Gateway Device discovery and Control Client".

• "Universal Plug and Play".

If you are using **Windows XP SP2**, select:

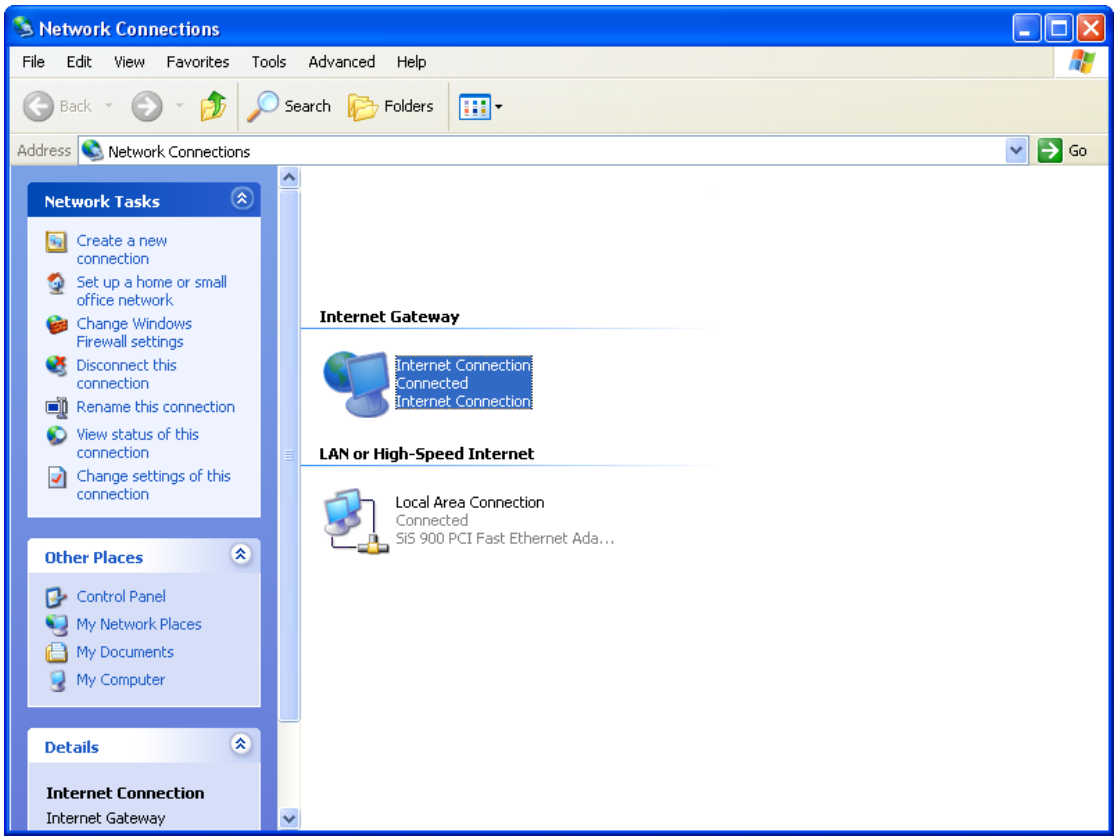
• "Internet Gateway Device discovery and Control Client".

• "UPnP User Interface".

6. Reboot your system.

Once you have installed the UPnP software and you have rebooted (and your network includes the IGD system), you should be able to see the IGD controlled device on your network.

For example, from the Network Connections window you should see the Internet Gateway Device:



D Troubleshooting

This appendix suggests solutions for problems you may encounter in installing or using the Wireless Gateway, and provides instructions for using several IP utilities to diagnose problems.

Contact Customer Support if these suggestions do not resolve the problem.

Troubleshooting Suggestions

Problem	Troubleshooting Suggestion
LEDs	
Power LED does not illuminate after product is turned on.	Verify that you are using the power cable provided with the device and that it is securely connected to the Wireless Gateway and a wall socket/power strip.
LINK LAN LED does not illuminate after Ethernet cable is attached.	Verify that the Ethernet cable is securely connected to your LAN hub or PC and to the Wireless Gateway. Make sure the PC and/or hub is turned on. Verify that your cable is sufficient for your network requirements. A 100 Mbit/sec network (10BaseTx) should use cables labeled CAT 5. A 10Mbit/sec network may tolerate lower quality cables.
Internet Access	
My PC cannot access the Internet	Use the ping utility (discussed in the following section) to check whether your PC can communicate with the device's LAN IP address (by default 10.0.0.2). If it cannot, check the Ethernet cabling. If you statically assigned a private IP address to the computer, (not a registered public address), verify the following: • Check that the gateway IP address on the computer is your public IP address (see Current Status for instructions on viewing the IP information.) If it is not, correct the address or configure the PC to receive IP information automatically. • Verify with your ISP that the DNS server specified for the PC is valid. Correct the address or configure the PC to receive this information automatically.
My LAN PCs cannot display web pages on the Internet.	Verify that the DNS server IP address specified on the PCs is correct for your ISP, as discussed in the item above. If you specified that the DNS server be assigned dynamically from a server, then verify with your ISP that the address configured on the Wireless Gateway is correct, then You can use the ping utility, to test connectivity with your ISP's DNS server.
Web pages	

Problem	Troubleshooting Suggestion
I forgot/lost my user ID or password.	If you have not changed the password from the default, try using "admin" the user ID and "administrator" as password. Otherwise, you can reset the device to the default configuration by pressing the Reset Default button on the Rare panel of the device (see *Rare Panel*). Then, type the default User ID and password shown above. **WARNING:** Resetting the device removes any custom settings and returns all settings to their default values.
I cannot access the web pages from my browser.	Use the ping utility, discussed in the following section, to check whether your PC can communicate with the device's LAN IP address (by default 10.0.0.2). If it cannot, check the Ethernet cabling. Verify that you are using Internet Explorer or Netscape Navigator v4.0 or later. Verify that the PC's IP address is defined as being on the same subnet as the IP address assigned to the LAN port on the Wireless Gateway.
My changes to the web pages are not being retained.	Be sure to use the *Confirm Changes/Apply* function after any changes.

Diagnosing Problem using IP Utilities

ping

Ping is a command you can use to check whether your PC can recognize other computers on your network and the Internet. A ping command sends a message to the computer you specify. If the computer receives the message, it sends messages in reply. To use it, you must know the IP address of the computer with which you are trying to communicate.

On Windows-based computers, you can execute a ping command from the Start menu. Click the *Start* button, and then click *Run*. In the *Open* text box, type a statement such as the following:

ping 10.0.0.2

Click *OK*. You can substitute any private IP address on your LAN or a public IP address for an Internet site, if known.

If the target computer receives the message, a *Command Prompt* window is displayed:

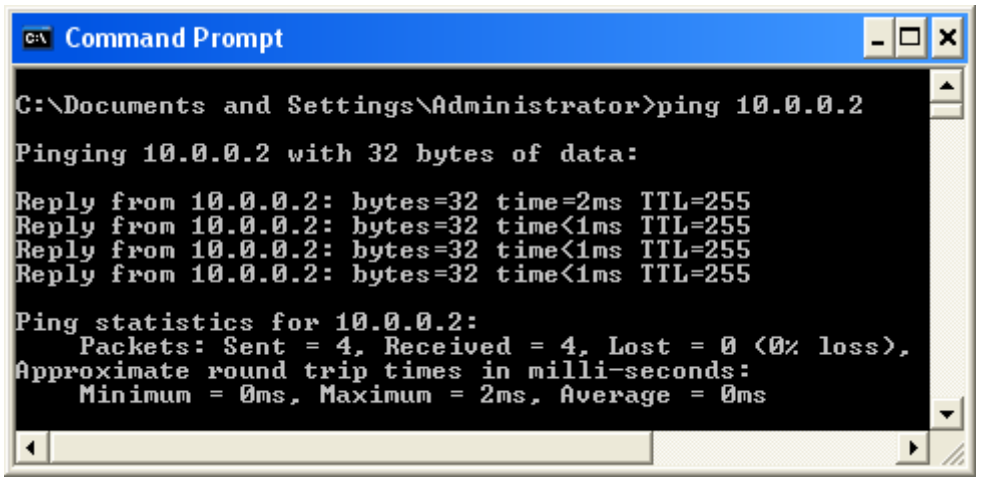


Figure 8: Using the ping Utility

If the target computer cannot be located, you will receive the message *Request timed out*.

Using the ping command, you can test whether the path to the Wireless Gateway is working (using the preconfigured default LAN IP address 10.0.0.2) or another address you assigned.

You can also test whether access to the Internet is working by typing an external address, such as that for *www.yahoo.com* (216.115.108.243). If you do not know the IP address of a particular Internet location, you can use the *nslookup* command, as explained in the following section.

From most other IP-enabled operating systems, you can execute the same command at a command prompt or through a system administration utility.

nslookup

You can use the nslookup command to determine the IP address associated with an Internet site name. You specify the common name, and the nslookup command looks up the name in on your DNS server (usually located with your ISP). If that

name is not an entry in your ISP's DNS table, the request is then referred to another higher-level server, and so on, until the entry is found. The server then returns the associated IP address.

On Windows-based computers, you can execute the nslookup command from the *Start* menu. Click the *Start* button, and then click *Run*. In the *Open* text box, type the following:

Nslookup

Click *OK*. A Command Prompt window displays with a bracket prompt (>). At the prompt, type the name of the Internet address that you are interested in, such as *www.microsoft.com*.

The window will display the associate IP address, if known, as shown below:

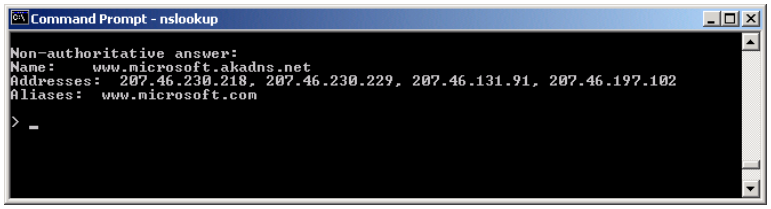


Figure 9: Using the nslookup Utility

There may be several addresses associated with an Internet name. This is common for web sites that receive heavy traffic; they use multiple, redundant servers to carry the same information.

To exit from the nslookup utility, type **exit** and press **[Enter]** at the command prompt.

E Glossary

10BASE-T A designation for the type of wiring used by Ethernet networks with a data rate of 10 Mbps. Also known as Category 3 (CAT 3) wiring. See *data rate, Ethernet*.

100BASE-T A designation for the type of wiring used by Ethernet networks with a data rate of 100 Mbps. Also known as Category 5 (CAT 5) wiring. See *data rate, Ethernet*.

ADSL Asymmetric Digital Subscriber Line
The most commonly deployed "flavor" of DSL for home users is asymmetrical DSL. The term asymmetrical refers to its unequal data rates for downloading and uploading (the download rate is higher than the upload rate). The asymmetrical rates benefit home users because they typically download much more data from the Internet than they upload.

analog An analog signal is a signal that has had its frequency modified in some way, such as by amplifying its strength or varying its frequency, in order to add information to the signal. The voice component in DSL is an analog signal. See *digital*.

ATM Asynchronous Transfer Mode
A standard for high-speed transmission of data, text, voice, and video, widely used within the Internet. ATM data rates range from 45 Mbps to 2.5 Gbps. See *data rate*.

authenticate To verify a user's identity, such as by prompting for a password.

binary The "base two" system of numbers, that uses only two digits, 0 and 1, to represent all numbers. In binary, the number 1 is written as 1, 2 as 10, 3 as 11, 4 as 100, etc. Although expressed as decimal numbers for convenience, IP addresses in actual use are binary numbers; e.g., the IP address 209.191.4.240 is 11010001.10111111.00000100.11110000 in binary. See *bit, IP address, network mask*.

bit Short for "binary digit," a bit is a number that can have two values, 0 or 1. See *binary*.

bps bits per second

bridging Passing data from your network to your ISP and vice versa using the hardware addresses of the devices at each location. Bridging contrasts with routing, which can add more intelligence to data transfers by using network addresses instead. The Wireless Gateway can perform both routing and bridging. Typically, when both functions are enabled, the device routes IP data and bridges all other types of data. See *routing*.

broadband A telecommunications technology that can send different types of data over the same medium. DSL is a broadband technology.

broadcast To send data to all computers on a network.

DHCP Dynamic Host Configuration Protocol
DHCP automates address assignment and management.

	When a computer connects to the LAN, DHCP assigns it an IP address from a shared pool of IP addresses; after a specified time limit, DHCP returns the address to the pool.
DHCP relay	Dynamic Host Configuration Protocol relay A DHCP relay is a computer that forwards DHCP data between computers that request IP addresses and the DHCP server that assigns the addresses. Each of the Wireless Gateway's interfaces can be configured as a DHCP relay. See *DHCP*.
DHCP server	Dynamic Host Configuration Protocol server A DHCP server is a computer that is responsible for assigning IP addresses to the computers on a LAN. See *DHCP*.
digital	Of data, having a form based on discrete values expressed as binary numbers (0's and 1's). The data component in DSL is a digital signal. See *analog*.
DNS	Domain Name System The DNS maps domain names into IP addresses. DNS information is distributed hierarchically throughout the Internet among computers called DNS servers. For example, *www.yahoo.com* is the domain name associated with IP address 216.115.108.243. When you start to access a web site, a DNS server looks up the requested domain name to find its corresponding IP address. If the DNS server cannot find the IP address, it communicates with higher-level DNS servers to determine the IP address. See *domain name.*
domain name	A domain name is a user-friendly name used in place of its associated IP address. Domain names must be unique; their assignment is controlled by the Internet Corporation for Assigned Names and Numbers (ICANN). Domain names are a key element of URLs, which identify a specific file at a web site. See *DNS.*
download	To transfer data in the downstream direction, i.e., from the Internet to the user.
DSL	Digital Subscriber Line A technology that allows both digital data and analog voice signals to travel over existing copper telephone lines.
encryption keys	See *network keys*
Ethernet	The most commonly installed computer network technology, usually using twisted pair wiring. Ethernet data rates are 10 Mbps and 100 Mbps. *See also 10BASE-T, 100BASE-T, twisted pair*.
FTP	File Transfer Protocol A program used to transfer files between computers connected to the Internet. Common uses include uploading new or updated files to a web server, and downloading files from a web server.
Gbps	Abbreviation of Gigabits per second, or one billion bits per second. Internet data rates are often expressed in Gbps.
host	A device (usually a computer) connected to a network.
HTTP	Hyper-Text Transfer Protocol HTTP is the main protocol used to transfer data from web

	sites so that it can be displayed by web browsers. See *web browser, web site*.
Hub	A hub is a place of convergence where data arrives from one or more directions and is forwarded out in one or more directions. It connects an Ethernet bridge/router to a group of PCs on a LAN and allows communication to pass between the networked devices.
ICMP	Internet Control Message Protocol An Internet protocol used to report errors and other network-related information. The ping command makes use of ICMP.
IEEE	The Institute of Electrical and Electronics Engineers is a technical professional society that fosters the development of standards that often become national and international standards.
Internet	The global collection of interconnected networks used for both private and business communications.
intranet	A private, company-internal network that looks like part of the Internet (users access information using web browsers), but is accessible only by employees.
IP	*See TCP/IP*.
IP address	Internet Protocol address The address of a host (computer) on the Internet, consisting of four numbers, each from 0 to 255, separated by periods, e.g., 209.191.4.240. An IP address consists of a *network ID* that identifies the particular network the host belongs to, and a *host ID* uniquely identifying the host itself on that network. A network mask is used to define the network ID and the host ID. Because IP addresses are difficult to remember, they usually have an associated domain name that can be specified instead. See *domain name, network mask*.
ISP	Internet Service Provider A company that provides Internet access to its customers, usually for a fee.
LAN	Local Area Network A network limited to a small geographic area, such as a home or small office.
LED	Light Emitting Diode An electronic light-emitting device. The indicator lights on the front of the Wireless Gateway are LEDs.
MAC address	Media Access Control address The permanent hardware address of a device, assigned by its manufacturer. MAC addresses are expressed as six pairs of hex characters, with each pair separated by colons. For example; *NN:NN:NN:NN:NN:NN*.
mask	*See network mask*.
Mbps	Abbreviation for Megabits per second, or one million bits per second. Network data rates are often expressed in Mbps.
NAT	Network Address Translation A service performed by many routers that translates your network's publicly known IP address into a *private* IP address for each computer on your LAN. Only your router and your LAN know these addresses; the outside world sees only the public IP address when talking to a computer on your LAN.

network	A group of computers that are connected together, allowing them to communicate with each other and share resources, such as software, files, etc. A network can be small, such as a *LAN*, or very large, such as the *Internet*.
network mask	A network mask is a sequence of bits applied to an IP address to select the network ID while ignoring the host ID. Bits set to 1 mean "select this bit" while bits set to 0 mean "ignore this bit." For example, if the network mask 255.255.255.0 is applied to the IP address 100.10.50.1, the network ID is 100.10.50, and the host ID is 1. See *binary, IP address, subnet*.
NIC	Network Interface Card An adapter card that plugs into your computer and provides the physical interface to your network cabling. For Ethernet NICs this is typically an RJ-45 connector. See *Ethernet, RJ-45*.
packet	Data transmitted on a network consists of units called packets. Each packet contains a payload (the data), plus overhead information such as where it came from (source address) and where it should go (destination address).
ping	Packet Internet (or Inter-Network) Groper A program used to verify whether the host associated with an IP address is online. It can also be used to reveal the IP address for a given domain name.
port	A physical access point to a device such as a computer or router, through which data flows into and out of the device.
PPP	Point-to-Point Protocol A protocol for serial data transmission that is used to carry IP (and other protocol) data between your ISP and your computer. The WAN interface on the Wireless Gateway uses two forms of PPP called PPPoA and PPPoE. See *PPPoA, PPPoE*.
PPPoA	Point-to-Point Protocol over ATM One of the two types of PPP interfaces you can define for a Virtual Circuit (VC), the other type being PPPoE. You can define only one PPPoA interface per VC.
PPPoE	Point-to-Point Protocol over Ethernet One of the two types of PPP interfaces you can define for a Virtual Circuit (VC), the other type being PPPoA. You can define one or more PPPoE interfaces per VC.
protocol	A set of rules governing the transmission of data. In order for a data transmission to work, both ends of the connection have to follow the rules of the protocol.
remote	In a physically separate location. For example, an employee away on travel who logs in to the company's intranet is a remote user.
RIP	Routing Information Protocol The original TCP/IP routing protocol. There are two versions of RIP: version I and version II.
RJ-11	Registered Jack Standard-11 The standard plug used to connect telephones, fax machines, modems, etc. to a telephone port. It is a 6-pin connector usually containing four wires.

RJ-45	Registered Jack Standard-45 The 8-pin plug used in transmitting data over phone lines. Ethernet cabling usually uses this type of connector.
routing	Forwarding data between your network and the Internet on the most efficient route, based on the data's destination IP address and current network conditions. A device that performs routing is called a router.
SDNS	Secondary Domain Name System (server) A DNS server that can be used if the primary DSN server is not available. *See DNS*.
subnet	A subnet is a portion of a network. The subnet is distinguished from the larger network by a *subnet mask* that selects some of the computers of the network and excludes all others. The subnet's computers remain physically connected to the rest of the parent network, but they are treated as though they were on a separate network. See *network mask*.
subnet mask	A mask that defines a subnet. See *network mask*.
TCP	See *TCP/IP*.
TCP/IP	Transmission Control Protocol/Internet Protocol The basic protocols used on the Internet. TCP is responsible for dividing data up into packets for delivery and reassembling them at the destination, while IP is responsible for delivering the packets from source to destination. When TCP and IP are bundled with higher-level applications such as HTTP, FTP, Telnet, etc., TCP/IP refers to this whole suite of protocols.
Telnet	An interactive, character-based program used to access a remote computer. While HTTP (the web protocol) and FTP only allow you to download files from a remote computer, Telnet allows you to log into and use a computer from a remote location.
TFTP	Trivial File Transfer Protocol A protocol for file transfers, TFTP is easier to use than File Transfer Protocol (FTP) but not as capable or secure.
TKIP	Temporal Key Integrity Protocol (TKIP) provides WPA with a data encryption function. It ensures that a unique master key is generated for each packet, supports message integrity and sequencing rules and supports re-keying mechanisms.
triggers	Triggers are used to deal with application protocols that create separate sessions. Some applications, such as NetMeeting, open secondary connections during normal operations, for example, a connection to a server is established using one port, but data transfers are performed on a separate connection. A trigger tells the device to expect these secondary sessions and how to handle them. Once you set a trigger, the embedded IP address of each incoming packet is replaced by the correct host address so that NAT can translate packets to the correct destination. You can specify whether you want to carry out address replacement, and if so, whether to replace addresses on TCP packets only, UDP packets only, or both.
twisted pair	The ordinary copper telephone wiring used by telephone companies. It contains one or more wire pairs twisted

	together to reduce inductance and noise. Each telephone line uses one pair. In homes, it is most often installed with two pairs. For Ethernet LANs, a higher grade called Category 3 (CAT 3) is used for 10BASE-T networks, and an even higher grade called Category 5 (CAT 5) is used for 100BASE-T networks. See *10BASE-T, 100BASE-T, Ethernet*.
unnumbered interfaces	
	An unnumbered interface is an IP interface that does not have a local subnet associated with it. Instead, it uses a *router-id* that serves as the source and destination address of packets sent to and from the router. Unlike the IP address of a normal interface, the router-id of an unnumbered interface is allowed to be the same as the IP address of another interface. For example, the WAN unnumbered interface of your device uses the same IP address of the LAN interface (10.0.0.2). The unnumbered interface is temporary – PPP or DHCP will assign a 'real' IP address automatically.
upstream	The direction of data transmission from the user to the Internet.
VC	Virtual Circuit A connection from your DSL router to your ISP.
VCI	Virtual Circuit Identifier Together with the Virtual Path Identifier (VPI), the VCI uniquely identifies a VC. Your ISP will tell you the VCI for each VC they provide. See *VC*.
VPI	Virtual Path Identifier Together with the Virtual Circuit Identifier (VCI), the VPI uniquely identifies a VC. Your ISP will tell you the VPI for each VC they provide. See *VC*.
WAN	Wide Area Network Any network spread over a large geographical area, such as a country or continent. With respect to the Wireless Gateway, WAN refers to the Internet.
Web browser	A software program that uses Hyper-Text Transfer Protocol (HTTP) to download information from (and upload to) web sites, and displays the information, which may consist of text, graphic images, audio, or video, to the user. Web browsers use Hyper-Text Transfer Protocol (HTTP). Popular web browsers include Netscape Navigator and Microsoft Internet Explorer. See *HTTP, web site, WWW*.
Web page	A web site file typically containing text, graphics and hyperlinks (cross-references) to the other pages on that web site, as well as to pages on other web sites. When a user accesses a web site, the first page that is displayed is called the *home page*. See *hyperlink, web site*.
Web site	A computer on the Internet that distributes information to (and gets information from) remote users through web browsers. A web site typically consists of web pages that contain text, graphics, and hyperlinks. See *hyperlink, web page*.
WWW	World Wide Web

Also called *(the) Web.* Collective term for all web sites anywhere in the world that can be accessed via the Internet.